SPECIAL EatingWell EDITION

EATING FOR Brain Health

Stay Sharp for Life • The Fitness Factor • The MIND Diet
Best Foods for Memory • The Mediterranean Mix

SPECIAL EatingWell® EDITION

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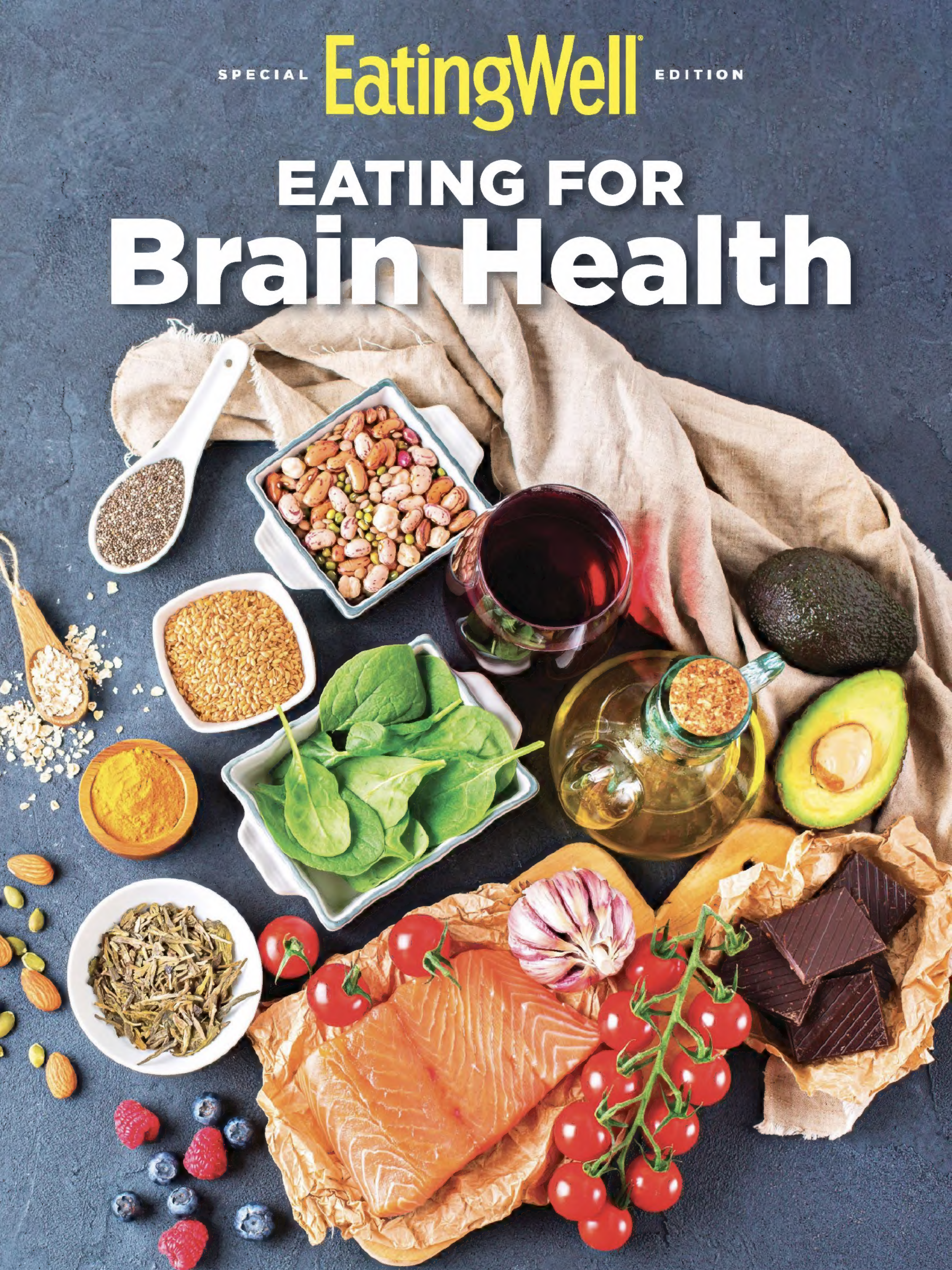

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This book is for general information purposes only, and nothing contained in it is intended to substitute for individualized advice from a physician or other health professional. The reader should consult the appropriate health professional in matters relating to physical and mental health and particularly with respect to any symptoms that may require diagnosis or treatment.

INTRODUCTION

BRAIN FOOD

How a well-nourished body supports a flourishing thinker.

BY JOYCE HENDLEY

It weighs just three pounds or so, but your brain is a mighty control center of everything you do and everything you are. It oversees all your body's functions and movements, and as a central part of your central and peripheral nervous systems, it receives and interprets information from the environment, including from your five senses (touch, hearing, sight, smell and taste). And, of course, your brain governs your intelligence, emotions and memories. You might say your brain is the essence of yourself—and maybe even of your soul.

That's why protecting this organ is so vitally important, and why so many of us fear losing healthy brain function. Foremost among our fears is developing Alzheimer's or another form of dementia, a progressive decline in cognitive and behavioral functioning that affects our ability to interact socially and live independently as we age. According to a 2018 University of Michigan poll on healthy aging, some 44 percent of a national sample of middle-aged adults reported being somewhat or very worried about developing dementia.

While the actual risk is much lower (statistics suggest fewer than 20 percent of 65-year-olds will go on to develop Alzheimer's or other dementias), available treatments for these conditions remain frustratingly few. That points our focus toward doing all we can to help prevent dementia from developing in the first place. Additionally, science is uncovering evidence that lifestyle can have an impact on our mood and behavior—and may influence our ability to manage or possibly even help prevent mental health disorders such as depression and anxiety.

Luckily, there's a lot we can do—and much of it treads on familiar ground. In fact, some of the most powerful ways to help keep your brain healthy are what experts have long recommended for staying healthy overall, including exercising regularly and getting adequate sleep; quitting if you're a smoker; staying on top of your blood pressure, cholesterol and blood sugar levels; managing stress; and staying socially engaged, maintaining connections with friends, family and colleagues. When it comes to managing or preventing memory disorders, it can also help to keep your mind challenged by learning new things, reading and—yes—doing crosswords and brain teasers.

IN RECENT YEARS, IT'S BECOME INCREASINGLY CLEAR that what we eat is a key piece of keeping our brain healthy. Early evidence comes from large-scale studies of eating patterns and long-term health, which have found that people who eat a nourishing variety of whole foods—particularly those who follow the heart-healthy, plant-abundant eating pattern typical of Mediterranean countries—may have a lower risk of developing dementia as they age compared with those eating a more Western-style diet (typically heavy on red meat, added sugars and saturated fats). More recent work is clarifying some of those associations.

For example, a 2021 German study evaluated the cognitive heath and dietary habits of 512 elderly men and women and conducted MRI scans of their brains. It found that those whose dietary patterns adhered more closely to the Mediterranean pattern tended to have greater brain volume, performed better on memory tests and had lower levels of blood

markers associated with Alzheimer's disease. Preliminary evidence also suggests that the Mediterranean diet—and the active, socially engaged lifestyle that traditionally accompanies it—is also associated with a lower incidence of mental health conditions such as anxiety and depression.

A more recent, and promising, variation of the Mediterranean diet is the MIND diet, which puts an additional focus on lowering blood pressure (a known risk factor for developing dementia). Short for Mediterranean-DASH Intervention for Neuro-degenerative Delay, MIND combines the tenets of the Mediterranean diet with the well-established heart-health benefits of the DASH (Dietary Approaches to Stop Hypertension) diet, created by the National Heart, Lung and Blood Institute. The combination aims to be a one-two punch to support brain health: Rich in plant-based foods—especially leafy greens and other vegetables, berries, whole grains, beans and nuts—with moderate amounts of fish, poultry and olive oil, it's a delicious prescription to live by. Though evidence is still coming in on this relatively new way of eating, a handful of studies suggest the MIND diet may help slow the rate of age-related cognitive decline and associate it with lower risks of Alzheimer's disease.

WE'RE STILL LEARNING HOW THESE DIETARY patterns may be brain-protective, and, as with everything related to diet and health, the actions are complex and likely interact with one another. One thing is clear: Everything we do to support our heart and circulatory system is also good for our brain, keeping the heart pumping efficiently and the blood vessels intact and wide enough so that blood can flow through them freely, including to and from the brain.

By enjoying more of these tasty, healthy foods rather than dwelling on the negatives of eating less, you'll be focusing on positive daily actions that can make a big difference in every aspect of your health—and your brain will thank you, too. Read on to discover how delicious these daily actions can be. ●

CHAPTER 1

Memory and Sharpness

A HEALTHY DIET PACKED WITH KEY FOODS CAN HELP SLASH YOUR RISK OF COGNITIVE DECLINE, INCLUDING ALZHEIMER'S DISEASE AND OTHER FORMS OF DEMENTIA.

THE POWER OF THE MIND DIET

Can you eat your way to good memory and cognitive health? The latest research behind the MIND diet, which has shown promise for preventing dementia, points to *yes*.

BY DEANNA PAI

Anyone who has lost a loved one to severe cognitive deterioration can attest to the emotional toll the disease takes. With dementia—the term for the group of brain disorders that lead to cognitive decline—and Alzheimer's disease, the best known of these conditions, the loss of recall and memory can be devastating. According to the Alzheimer's Association, in 2021, more people died of dementia than of breast and prostate cancers combined. More than 6 million Americans live with Alzheimer's today.

While a cure has yet to be found, the MIND diet (short for Mediterranean-DASH Intervention for Neurodegenerative Delay) has shown promise in recent years as a way to help prevent and delay the onset of dementia. MIND is a blend of the Mediterranean and Dietary Approaches to Stop

Hypertension (or DASH) diets. It originated at Rush University in Chicago in 2015, when researchers discovered its potential to slow cognitive decline.

"For more than 20 years, the late Martha Clare Morris, a nutritional epidemiologist who was at the forefront of research on diet and brain health, worked tirelessly to promote a healthy diet as 'medicine' for the brain," says Lisa Barnes, PhD, a professor and cognitive neuropsychologist at Rush University's Alzheimer's Disease Center, who coauthored much of the research. "Based on years of research and collaborations with a number of investigators at Rush and Harvard, she and her team developed the MIND diet based on findings from observational studies that showed links between certain foods and brain health."

What Is the MIND Diet?

Published in the journal *Alzheimer's & Dementia* in 2015, the initial study establishing the potential power of the MIND diet found that foods like leafy greens and berries, among several others, were helpful in reducing the risk of cognitive decline over the years. What sets the diet apart is that it borrows components from two largely popular and effective eating patterns.

The first is the Mediterranean diet, which is known for is its correlation with Blue Zones—those areas in the world that have the highest number of centenarians, says Kristina McLinden, PhD, a program director at the National Institute of Aging who oversees the Alzheimer's disease and Alzheimer's disease–related dementias nonpharmacological

clinical trials portfolio in the institute's Clinical Interventions and Diagnostics branch. "Then it combines the DASH diet, which is a heart-healthy diet designed to lower hypertension. It brings these two together, and we have evidence that this could be a diet that could be very impactful in staving off cognitive decline and perhaps dementia."

So far, the MIND diet seems to be more effective for brain health than either originating diet. A 2019 review in *Alzheimer's & Dementia* found that the MIND diet, but not the Mediterranean diet alone, was associated with a lower risk of cognitive decline.

Still, the Mediterranean and DASH diets were (and still are) popular among experts and consumers, so it seemed natural to combine the two. "Neither of these diets had these hard-and-fast sorts of guidelines yet; it seemed that there were beneficial effects from both of them," says Alice H. Lichtenstein, a senior scientist and director of the Cardiovascular Nutrition Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University. "Why not try to sort of take the best aspects from each?"

The MIND diet seems to offer more flexibility and ease than its ancestors. Importantly, it's also less restrictive than either the Mediterranean or DASH diet, according to nutritionist Maggie Moon, RD, author of *The MIND Diet: A Scientific Approach to Enhancing Brain Function and Helping Prevent Alzheimer's and Dementia.* "It's simpler than its component diets because it requires less fish than the Mediterranean diet, less dairy than the DASH diet and less fruit than either one," she explains. "Overall, it has fewer required servings of grains, vegetables, fruits and fish, and no emphasis on dairy or any limits on total fat to worry about." With fewer parameters to consider, the MIND diet is easier to stick with on a long-term basis.

Finally, its protective abilities may go above and beyond the scope of memory. "We and others have shown that the MIND diet has effects on brain health outside of Alzheimer's disease and dementia, including links with fewer depressive symptoms, a reduced risk of functional disability, and decreased risk and slower progression of parkinsonism in older adults," says Rush University's Barnes.

The Thinking Behind the MIND Diet

Just how the MIND diet works isn't exactly clear. That's because the connection arose from large-scale epidemiological studies, which tend to be observational, says McLinden. Basically, researchers assess a group of individuals over time, tracking their diet and charting the various outcomes. While this can be helpful for opening new areas of study, "the gold standard for research is a randomized controlled clinical trial," she says. Such trials are in the works, but until then, much of the research hinges on correlation, not causation.

That said, experts have some ideas about what could be at play. For starters, it might be the gut-brain connection, also known as the gut-brain axis. "Our brains are complex, but so are our digestive systems—and the interaction of the two is another level of complexity," says Heather Snyder, PhD, the Alzheimer's Association vice president of medical and scientific relations. "If the digestive system is having issues, then you may have an increase in inflammation—and that's going to also impact your overall health and possibly your overall brain function." A recent systematic review in *Frontiers in Aging Neuroscience* found that probiotics can benefit both digestive and cognitive health, possibly by regulating inflammation.

A 2019 review in *Alzheimer's & Dementia* found that the MIND diet was associated with a lower risk of cognitive decline.

Another potential link? "Everything that's good for the heart is good for the brain, so the MIND diet is going to have positive impacts on cardiovascular function as well as the brain," says McLinden. "That's why it contains elements of the DASH diet. Lowering hypertension and improving that aspect of your cardiovascular system has tremendous impacts throughout your body, including your brain."

Other recent studies have suggested that the MIND diet has a more targeted impact on the brain. For instance, its components may offer an anti-inflammatory and antioxidant effect, per a 2021 study in the *Journal of Alzheimer's Disease,* while a 2022 paper found that the MIND diet led

to a significant reduction in the compound homocysteine, high levels of which are linked to neurodegenerative diseases like Alzheimer's.

A 2016 study published in the journal *Annals of Neurology* found that food high in vitamin E—a key component of the MIND diet—was linked to better white matter integrity (white matter is the nerve-rich tissue in the brain; studies have linked white matter abnormalities to Alzheimer's disease). Together, the foods recommended in the MIND diet may trigger various mechanisms to keep the brain sharp in the long run.

Why MIND Is Worth Starting at Any Age

The MIND diet shows promise as a preventative intervention for dementia, says Barnes. However, as McLinden pointed out, it can be hard to say for sure when you're working with an observational study. Barnes just completed the first randomized clinical trial funded by the National Institutes of Health to see whether it can slow cognitive decline. The results are pending. "The study included older adults, half of whom were randomized to the MIND diet and half who were randomized to their usual diet—so the results will tell us whether adopting this diet in later life can be helpful," she says.

Still, the signs point to *yes*—the MIND diet seems to delay dementia. The participants in many of these studies are "individuals who are perhaps thought to be at an increased risk, either because of a family history or for other reasons," says Snyder. "Once they're engaged in the MIND diet, it's been determined that fewer people go on to develop memory changes than those who are not engaged in the diet intervention."

Also working in its favor is that the MIND diet is generally good for the body, full stop. "What I think is interesting is that the components of the MIND diet are consistent with all the other dietary patterns considered to be beneficial for health outcomes, regardless of which one is looked at—which is an advantage," says Lichtenstein. "It'd be really difficult if we said, 'Well, do this, we know this works for cognitive function, but it doesn't work for diabetes, or it doesn't work for bone health.' It just seems that some of the common elements are beneficial for most health outcomes."

The Foods That Matter Most

Experts stress that it's not one type of food that offers protection against dementia. "It's the concert of whole foods eaten in balance, with variety and over time, that will do the most good for the brain, rather than any single food alone," says Moon. The landmark MIND diet study focused on berries, leafy greens, other vegetables, nuts, beans, whole grains, fish, poultry, olive oil and wine. With that in mind, the following foods will offer the most benefit when you incorporate them into your diet.

Bring on the blueberries. "A number of studies, including in animals, have shown that dietary intake of berries is associated with neuroprotection in animals and slowed cognitive decline in humans, so that is the reason for inclusion of berries," says Barnes. Blueberries are naturally brimming with phytonutrients—not to mention delicious.

"Vegetables, leafy greens in particular, are included because of micronutrients important to brain health, such as folate and B_6—which, combined with B_{12}, may clear out homocysteine, a risk factor for cognitive impairment," says Moon. Not only may they reduce the risk, but leafy greens like spinach, kale and chard might be able to stop or even reverse the cognitive clock. Barnes points to a 2018 study published in the journal *Neurology* that found consumption of approximately one serving per day of green leafy vegetables may help to slow cognitive decline with aging.

Fish ranks highly in the MIND diet for its omega-3 fatty acid content, with a recommended one serving per week. "In general, there is strong evidence that omega-3 fatty acids, mainly from fish intake, are associated with better brain health," says Barnes. "A number of studies have shown associations between higher fish intake and slower cognitive decline, lower risk of dementia and better brain integrity in neuroimaging studies." While there are inconsistences in the current literature, she explains that these are largely due to the type of omega-3 fatty acid consumed—such as DHA and EPA—and whether it's measured by self-reporting versus measuring levels in the blood.

While a fish oil supplement might be convenient,

it doesn't take the place of grilled fish. "Supplementation can help fill the nutrient gaps—say, if you don't like fish and seafood or don't have access to it, so you don't include it in your diet—but I would not rely on it to fully support brain health," says Julie Andrews, RDN, a chef, dietitian and author of *The MIND Diet Plan and Cookbook: Recipes and Lifestyle Guidelines to Help Prevent Alzheimer's and Dementia*. She adds that the nutrients in supplements aren't always as bioavailable (easily absorbed and used by the body) as those in food. Plus, she says, "Many of them rely on each other for absorption—for example, fat-soluble vitamins like vitamins A and D are better absorbed when consumed along with fats like olive oil."

Nuts are a natural source of vitamin E, which may help stymie the risk of dementia; as vitamin E is an antioxidant, it may help buffer against oxidative stress, which can stoke inflammation. One 2019 study in *Clinical Interventions in Aging*, for example, found a link between low levels of vitamin E and increased risk of Alzheimer's disease. To get more on your plate, "store snack packs of nuts in your desk drawer and enjoy them as a mid-morning or late-afternoon snack," says Moon. "Almonds, pistachios and peanuts are all available in snack packs, or you can make your own mix at home with your favorites."

A 2022 observational study in *Nutritional Neuroscience* found that those who ate more fiber—particularly soluble fiber, such as that found in oats and beans—had a lower risk of developing dementia. That lends further support to the theory that there's a connection between a balanced gut and cognitive health, as soluble fiber can regulate the gut and therefore modulate inflammation.

Just as important as what to eat: what not to eat. The MIND diet takes that into consideration, too. Rather than eliminating certain foods entirely, though, "it suggests limiting red meat, whole-milk dairy products, sweets and pastries, and deep-fried foods—and avoiding trans fats," says Andrews.

How to Get Started

Rather than giving your eating habits a full overhaul, incorporate foods from the MIND diet one at a time. "For example, start by working more leafy green vegetables into your meals, such as adding a few handfuls of spinach or kale to your smoothies, soups, casseroles and pasta dishes," says Andrews. Ideally, the goal for leafy greens is one cup raw (or half a cup cooked) greens at least six days a week, but if you're starting from zero, start with a few cups each week and work your way up.

As for berries, the MIND diet only calls for two cups per week—which is a relatively low-stakes approach. "You could always do more. It's 'at least' two servings," McLinden points out. "But that goes to show that you can make relatively small changes and potentially have a big affect on cognitive health."

The MIND diet is not just about the food, but how you prep it—for instance, roasting is preferable to deep-frying. In fact, "the MIND diet specifically limits fried foods because they are high in saturated fat and pro-inflammatory," says Moon. So skip the battered zucchini and lightly sauté it in olive oil (another component of the MIND diet) instead.

And you don't need to always have a brand-new bag of baby spinach on hand to reap the benefits. "Some of my clients feel overwhelmed, like they need to cook everything from scratch, but that's not always the case," says Andrews. She recommends using frozen spinach, kale and other leafy greens, which can be less expensive (and less likely to go to waste) than their fresh counterparts. Plus, she says, "frozen leafy green vegetables can be stirred into so many dishes, like soups, stews, pasta dishes, smoothies, egg bakes and scrambles—and are easy to sauté in a little olive oil with some garlic for flavor."

One of the biggest advantages of the MIND diet is that it's relatively flexible; as a result, it can be adjusted to accommodate your lifestyle and preferences. "It ensures that you're getting the aspects of the nutritional components that are going to be the most important for overall health," says Snyder. "It's not that you can only eat things on this list. But it ensures that you're getting the nutrients across the board that are going to be the most important for your overall brain function."

It even allows for alcohol, which can often be a hard sell with some health-focused eating plans. "In keeping with its Mediterranean influence, the MIND diet includes moderate alcohol, keeping it to one glass a day," says Moon. "A glass of red wine with dinner is a simple way to enjoy a moderate amount of wine." In eschewing the all-or-nothing approach, the MIND diet can boost consistency.

Of course, food alone won't protect you from Alzheimer's disease or other cognitive decline. "Right alongside diet, I would suggest focusing on getting aerobic exercise," says McLinden. "We have trials that we're supporting, such as the EXERT trial, which is looking at aerobic exercise to see if it can delay cognitive decline." She also recommends focusing on getting high-quality sleep. "It's not only good to improve sleep on its own, but sleep can also help you better control your diet and be more up for exercising," she explains. ●

BRAIN HEALTH SUPERFOODS

Eating some of these all-star foods can help improve memory and learning throughout your life.

BY SARAH ANZLOVAR, RDN, LDN

What to eat to keep your thinker in tip-top shape is a bit of a no-brainer: What's good for the rest of your body is also good for your brain. Filling your plate with whole foods (more plants than animal) and lots of colorful produce goes a long way. In fact, overall dietary patterns that prioritize plant-based foods and contain less meat and fewer processed foods are linked to both better brain function and reduced risk of brain-related diseases. Plant-based foods like fruits, vegetables, whole grains, beans, nuts and seeds are full of vitamins, minerals, antioxidants and (in some cases) healthy fats that will support your brain throughout your life. While your overall diet matters most, some foods can give your brain an extra boost.

Beets

"Beets are high in nitrates that help increase blood flow to the brain, which means our brain gets what it needs faster," says Nicole Stefanow, RDN, a dietitian in the New York City area. It's thought that dietary nitrates (from plant foods) may even slow age-related cognitive decline and dementia. "Beets also contain rich pigments called betalains, which give them their signature ruby-red color, decrease oxidative stress and inflammation, and help prevent premature brain aging and neurodegenerative diseases like Alzheimer's and Parkinson's disease," adds Stefanow.

Pumpkin Seeds

While other nuts and seeds tend to get more love, pumpkin seeds are like little powerhouse plants for our brain. They're packed with zinc—they're

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ROAST BEETS WITH HONEY FOR A SIDE DISH THAT MAKES THE MOST OF THIS UNDERRATED VEGETABLE

the best plant-based source of this mineral, with 20 percent of the daily value per ounce—which plays an important role in brain health. Low levels of zinc have been linked to both neurodegenerative diseases like Alzheimer's and mental health conditions such as schizophrenia. Pumpkin seeds are also a good source of B vitamins and magnesium, which may play a role in cognition and mood.

Walnuts

All nuts offer a variety of health benefits, but walnuts—which coincidentally look a bit like a brain—are some of the best for your gray matter. Studies have shown a connection between regular walnut consumption (about half an ounce per day) and better brain health as we age, from improved mental performance to reduced cognitive decline. "What makes walnuts special is that they contain one of the highest amounts of a potent antioxidant called gamma tocopherol, and they also have a high composition of polyunsaturated fatty acids, including alpha linoleic acid," says Cheryl Mussatto, RD, LD, author of *The Nourished Brain.* "Studies suggest that the high antioxidant content in walnuts may help counteract age-related cognitive decline and reduce the incidence of neurodegenerative diseases, including Alzheimer's disease."

Eggs

"Eggs are one of the best food sources of choline, a nutrient that plays a positive role in better cognitive function," says registered dietitian and women's health expert Lauren Manaker, RDN, LDN. "Along with choline, egg yolks also contain a carotenoid called lutein. Although lutein has long been associated with eye health, research has discovered that it may play an important role in cognition as well." Choline plays an important role in brain health and cognitive performance from as early as conception and continues to be effective throughout life, yet it's estimated that up to 90 percent of Americans don't consume enough choline. Most of the beneficial nutrients are found in the yolk, so be sure to eat the whole egg!

Olive Oil

An important component of both the Mediterranean diet, which has been linked to better brain health, and the MIND diet (a plan specifically designed to ward off Alzheimer's disease

and dementia), olive oil is one of the best fats to keep your brain healthy. Research has linked olive oil consumption to the prevention of both acute and chronic neurological disorders, including Parkinson's, Alzheimer's and stroke. "It's rich in monounsaturated fats, which can reduce inflammation and plaque buildup [including in the brain]," says culinary nutritionist Laura M. Ali, RDN, LDN. "Even more important, it has a high antioxidant and phenol content that has been proposed to reduce oxidative stress in the brain—thought to be a major contributor to cognitive decline."

Fish

Another star of both the Mediterranean and MIND diets, fish is regularly found in research to be linked to reduced risk of cognitive decline. While many experts attribute this benefit to the omega-3 fatty acid content of fatty fish such as salmon, one analysis suggests that there are benefits to eating fish for reasons other than fat content.

As with eggs, these benefits are seen across our entire life span. "Pregnant women who ate up to 12 ounces of seafood a week had children with improved cognition, including higher IQ scores," says Ali. "Research has also shown that "healthy elderly people who eat just one meal of any type of seafood a week, as long as it is baked or broiled, had an increase in the volume of the area of the brain responsible for memory and cognition, which is important for reducing the risk of Alzheimer's disease."

When it comes to eating seafood, choose the varieties you enjoy the most and aim to eat 12 ounces per week. ●

What You Might Want to Avoid

Certain foods could hinder the brain-boosting power of a healthy diet.

Processed foods

Diets high in processed foods are linked to a slew of negative health outcomes, and the health of your brain is no exception. Several studies have linked Western diets, which tend to contain a lot of processed, fried and fast foods, to cognitive impairment and worse memory and learning scores. On the flip side, both the MIND and Mediterranean diets, which contain few (if any) processed and fried foods, are known to be protective. In addition, greater consumption of processed foods has been linked to increased risk of stroke. The good news? The food industry has caught on to our desire for both convenience and health, and there are plenty of packaged foods available that are less processed and contain actual nutrients—you just have to seek them out!

Sugar-sweetened beverages

Need another reason to cut back on the sweet stuff? High-sugar diets have been linked to Alzheimer's disease, dementia and lower cognitive scores. According to the Dietary Guidelines for Americans, sugar-sweetened beverages account for the largest portion (about 25 percent) of added sugar intake in American diets.

It's recommended that women limit their added sugar intake to less than 24g per day and men to less than 36g per day. For context, one 12-ounce can of soda contains around 39g of sugar—more than the recommended limit for both men and women. Lemonade, sweetened iced tea, energy drinks, fruit-juice drinks and other sweetened drinks can add up quickly, too. Instead, grab a flavored seltzer, or infuse water with fresh fruit, citrus or herbs for a refreshing, slightly sweet beverage without all the sugar.

Red meat

It probably doesn't come as a surprise that limiting red meat can mean better brain health. As with other health concerns, both stroke risk and risk of neurodegenerative diseases like dementia and Alzheimer's can be influenced by inflammation as well as saturated fat intake. "Red meat is high in saturated fat, which can lead to plaque buildup in the brain," notes Ali. "Research has shown that people who swap poultry, fish and beans into their diet in place of red meat have improved cognitive performance." That doesn't mean you have to completely give up red meat. Just keep your consumption to under 12 ounces a week, and consider swapping red meat for fish, beans or tofu at some meals.

Do "Smart Pills" Really Improve Focus and Memory?

As nootropic compounds gain mainstream popularity, here's what the science says about their smarts-enhancing potential.

KAREN ANSEL, RD

Who doesn't want to be smarter, sharper, and more focused and creative? Nootropics (pronounced *new-traw-picks*) promise all of this and more. These "smart pills"—a group of natural and synthetic compounds, often found in supplement or prescription form—might sound new, but nootropics have been around since the early 1970s, when Romanian psychologist and chemist Corneliu Giurgea created a synthetic substance called piracetam to improve learning and memory and coined the term.

Nootropics get their name from the Greek words *nous* (mind) and *trepein* (bend or turn). There are more than 130 over-the-counter nootropics, including ginseng, ginkgo, guarana, creatine, caffeine and Bacopa monnieri as well as piracetam, plus prescription versions, such as the ADHD medications Adderall and Ritalin and the Alzheimer's treatment Aricept.

Today, nootropics and other brain-health supplements are a billion-dollar industry in the U.S. And of the estimated 16 million American adults who use stimulants like Adderall, about 5 million do so off-label, with half of those specifically aiming to enhance their brainpower. "People will jump at any opportunity to try something that might be mentally curative or restorative," says Maya Babu, MD, a neurosurgeon at Cleveland Clinic Martin Health in Port Saint Lucie, Florida. "Younger people are interested in potential memory and attention benefits, while older adults are concerned about dementia."

But do OTC nootropics work? The research says not so much. When scientists reviewed 394 studies for a 2020 *Nutrients* review on nootropics, they ended up tossing out 73 percent for low quality (meaning the results didn't hold up to rigorous scientific scrutiny). After studying the remaining supplements, they concluded that the only one that might be useful was caffeine, which showed promise for improving memory, attention, reasoning and problem-solving. And even that was mostly among sleep-deprived people.

There are also safety concerns. Supplements aren't subject to the same clinical trials as prescription drugs, and their labels are often riddled with unsubstantiated claims. The issue is so problematic that in 2019, the FDA and the Federal Trade Commission sent letters to three nootropic manufacturers demanding that they to promptly correct the false or misleading claims on their labels. One ginkgo biloba brand got a slap on the wrist for touting an ability to improve memory. And a purveyor of colostrum supplements got called out for Alzheimer's-prevention claims.

As for prescription nootropics, "for patients with true ADHD or dementia, certain medications can be tremendously helpful for attention, alertness and focus," says Dr. Babu. "But for those without these underlying conditions, I haven't seen data that nootropics can increase performance." Indeed, a 2016 American Academy of Family Physicians review found no evidence that Alzheimer's medications do anything to improve mental function in healthy people, and that the impact of ADHD medications for those without the condition are modest at best. "In the end, I don't think nootropics can replace sleep, healthy diet, physical activity and memory exercises," says Dr. Babu. "I'd hate to see people think they will benefit them in any meaningful way." Her advice: Next time you need a brain boost, try a strong cup of coffee.

THE HIGH BLOOD PRESSURE HAZARD

Having hypertension (or a family history of it) can speed up cognitive decline. There are science-backed ways to combat both.

BY KARLA WALSH

True, your body is made up of many different systems, such as the circulatory system and the nervous system. But there's not a hard line separating each. The more we learn about the body, the more we realize that all of our cells are remarkably connected, working in tandem. Gut health relates to stress and anxiety levels, what we eat can impact our hair hue, chronic conditions can impact long-term cognition, and so much more.

Two systems that are very much in sync—for good or bad—are the head and the heart. As we've mentioned before, all of the major risk factors for heart disease overlap with Alzheimer's disease risk factors; just tack on a few more cognition and social factors for the latter. So it makes sense that new research published in the journal *Hypertension* confirmed that high blood pressure can speed memory loss and other forms of cognitive decline in middle-aged adults and seniors, even if the blood pressure elevation occurs only early or only late in life.

Brain Health and Blood Pressure 101

"Heart health and brain health are tightly interconnected," explains David Amstel, MD, a cardiologist at Westmed Medical Group in Yonkers, New York. "An estimated 25 percent of the blood pumped out of the heart flows through the brain, so any condition that impairs cardiovascular health will have negative impacts on the function of our other organs."

Hypertension—or blood pressure over 130/80 mm Hg, per the American Heart Association criteria—is particularly damaging to brain function and is known to cause strokes and certain forms of dementia, Dr. Amstel says.

A MIX OF EATING WELL AND GETTING ACTIVE CAN AID DOCTOR-PRESCRIBED MEDICATION FOR YOUR HEART.

"High blood pressure is also linked to impairments of cognition, learning and memory. Recent data suggests this effect is true no matter how long a patient is hypertensive or at what age hypertension begins," he adds.

Our blood pressure range is critical to the functioning of the entire body, says Michael Silver, MD, a cardiologist and internal medicine physician at Westmed Medical Group in White Plains, New York. "Elevated blood pressure leads to more strain on the blood vessel walls. This causes blood vessel walls to thicken and promotes entry of cholesterol into the walls, which narrows the passage of blood into these organs," Dr. Silver explains. "Both the heart and brain are organs that depend on an adequate blood flow to provide nutrition and oxygenation for their activity."

Lower blood flow can cause improper function or, if severe, the death of certain areas of the heart and brain (known respectively as heart attack and stroke). And the wild part is, some brain-harming strokes can be so subtle that we might not even be aware they're happening.

"Hypertension is a very important risk factor in 'silent strokes,' which can lead to cognitive decline. It depends on in what part of the brain you're having the stroke; different regions control speech, movement and memory," says Salim S. Virani, MD, PhD, a professor of cardiology at Baylor College of Medicine in Houston. "A lot of these strokes might be subclinical, but 'mini' or 'silent' strokes can be severe if they occur at a high frequency."

What Doctors Want You to Know About Hypertension

Hypertension is one of the most common medical conditions in the United States; an estimated 45 to 50 percent of adults have the diagnosis, according to the latest data from the Centers for Disease Control and Prevention. "There are many causes, including obesity, sedentary lifestyle, smoking, poor dietary habits, excess alcohol intake and stress. Age, race and family history are also strong contributors," Dr. Amstel explains.

In 95 percent of those diagnosed with hypertension, doctors cite the cause as "idiopathic," Dr. Silver says, "meaning there is no identifiable cause. In the other 5 percent, causes such as kidney disease, benign tumors of the adrenal gland, vascular disease, sleep apnea and thyroid disease may exist."

If you are among the one in two Americans with high blood pressure, received a borderline high reading at your latest physical, or have a family history of hypertension, the good news is that a lot of the power lies in your hands, Dr. Amstel says: "Patients should take an active role in their health care to prevent hypertension."

Whether you decide to take charge largely because of your heart health or you are worried about dementia risk too, there's no wrong reason to start shifting toward healthier lifestyle patterns, the doctors agree.

How to Keep Your Blood Pressure in Check and Your Brain Healthy

"Since elevated blood pressure causes no 'symptoms'—it is a silent disease and can change over time—regular trips to the doctor for evaluation are important," Dr. Silver says.

Visit your primary care doctor at least once a year for a physical and blood pressure check. Blood pressure medication will almost always be a plan B after you try these lifestyle modifications to potentially lower blood pressure naturally, Dr. Virani adds.

Aim for 150 minutes of moderate or 75 minutes of vigorous physical activity per week, per World Health Organization and AHA recommendations. But don't feel intimidated if you can't meet that mark right away, Dr. Virani says: "Physical activity is very effective in lowering blood pressure. Taking any time for physical activity is better than no time. Those who start as sedentary and get more activity than zero are still achieving some benefits."

Eating less sodium and more potassium will help your body maintain proper fluid balance and blood volume so it can function well. Opt for fresh or dried herbs and spices to flavor dishes, choose low-sodium versions of foods when grocery shopping, and try to cut back on packaged foods that are high in sodium. Potassium is found in many foods, particularly fruits and vegetables, in addition to dairy items, beans and some meats.

Your doctor can help you determine whether losing weight would be good for your blood pressure. "Research suggests that a 1-kilogram [2.2-pound] weight loss may lower blood pressure by 5 mm Hg," Dr. Virani says. A healthy whole-foods, plant-forward diet is beneficial, Dr. Amstel adds.

The Bottom Line

"Based on our race and ethnicity, we may be more sensitive to one or another lifestyle modification; try them each and see which works best," Dr. Virani says. As a bonus nugget of motivation, he adds, "These are not just good for blood pressure–lowering. They also reduce risk for stroke, improve cognition, reduce the risk of cancers, improve heart health and more. There are many benefits related to healthy lifestyle choices."

The more love you give to your heart, the more your brain will benefit. Keeping your blood pressure in a healthy range is good for so many reasons, and brain health is an important one. Eat more whole foods, particularly potassium-rich fruits and veggies, while decreasing the amount of sodium in your diet. Keep alcohol intake to a minimum, move your body regularly, and talk to your doctor to see if losing weight is right for you. ●

MEAL PLAN FOR MEMORY

This 7-day brain-health meal plan is aimed at reducing the risk of age-related cognitive decline.

BY EMILY LACHTRUPP, RD

Most of us have heard that healthy lifestyle habits can help prevent or lower our risk of developing issues such as diabetes and heart disease as we age. But did you know that the habits we forge now can also reduce our risk of cognitive decline as we get older? Growing research shows that people who have high blood pressure, high fasting blood sugars and heavier body weight in their 20s and 30s are more likely to experience cognitive decline as they get older. For this healthy Mediterranean-inspired diet plan, we chose a week of brain-boosting meals and foods to protect your head and improve your overall health.

Because weight loss can play a role in protecting your brain if you're overweight, we set this plan at 1,500 calories per day, a level at which most people will lose 1 to 2 pounds per week.

How to Meal-Prep for the Week

Prepare the Meal-Prep Vegan Moroccan Lettuce Wraps (page 28) through step 1 to have for lunch on days 2 through 5.

DAY 1

Breakfast

280 CALORIES

Muesli with Raspberries

SERVING: 1

- ⅓ cup muesli
- 1 cup raspberries
- ¾ cup low-fat milk

Top muesli with raspberries and serve with milk.

A.M. Snack

174 CALORIES

Everything Bagel Avocado Toast

SERVING: 1

- ¼ medium avocado, mashed
- 1 slice whole-grain bread, toasted
- 2 teaspoons everything bagel seasoning

TO MAKE AHEAD: PREPARE BULGUR (STEP 1) AND REFRIGERATE FOR UP TO 1 DAY.

Pinch of flaky sea salt (such as Maldon)

Spread avocado on toast. Top with seasoning and salt.

Lunch

430 CALORIES

Mason Jar Power Salad with Chickpeas & Tuna

SERVING: 1

- **3 cups chopped kale (bite-size pieces)**
- **2 tablespoons honey-mustard vinaigrette**
- **1 (2.5-ounce) pouch tuna in water**
- **½ cup rinsed canned chickpeas**
- **1 carrot, peeled and shredded**

1. Toss kale and dressing in a bowl, then transfer to a 1-quart mason jar. Top with tuna, chickpeas and carrot. Screw lid onto the jar and refrigerate for up to 2 days.

2. To serve, empty the jar's contents into a bowl and toss to combine the salad ingredients with the dressed kale.

SERVE WITH

Honey-Mustard Vinaigrette

- **1 clove garlic, minced**
- **1 tablespoon white wine vinegar**
- **1½ teaspoons Dijon mustard (coarse or smooth)**
- **½ teaspoon honey**
- **⅛ teaspoon salt**
- **Freshly ground pepper, to taste**
- **⅓ cup extra-virgin olive oil or canola oil**

Whisk garlic, vinegar, mustard, honey, salt and pepper in a small bowl. Slowly whisk in oil.

P.M. Snack

154 CALORIES

- 1 cup sliced carrots
- ½ cup hummus

Dinner

437 CALORIES

Tabbouleh with Pan-Seared Chicken

ACTIVE: 40 MIN **TOTAL:** 40 MIN
SERVINGS: 6

- **1 cup medium bulgur (see Tip)**
- **1½ cups water**
- **6 tablespoons olive oil, divided**
- **1 pound boneless, skinless chicken breast, cut into ½-inch pieces**
- **½ teaspoon garlic powder**
- **1 teaspoon salt, divided**
- **2 large tomatoes, seeded and chopped**
- **2 scallions, finely chopped**
- **2 cups chopped fresh flat-leaf parsley (about 2 large bunches)**
- **½ cup chopped fresh mint**
- **4 tablespoons lemon juice**

1. Combine bulgur and water in a medium saucepan. Bring to a simmer. Cover and cook on low heat until tender, 10 to 12 minutes. Drain and rinse under cold water. Transfer to a large bowl.

2. Heat 2 tablespoons oil in a large skillet over medium-high heat. Add chicken, garlic powder and ½ teaspoon salt. Cook, stirring occasionally, until the chicken is cooked through and just browned, 6 minutes. Let cool slightly.

3. Add the chicken and any juices from the skillet to the bowl with the bulgur. Add tomatoes, scallions, parsley, and mint; stir to combine. Whisk lemon juice and the remaining 4 tablespoons oil and ½ teaspoon salt in a small bowl. Add to the bulgur mixture and stir to combine.

Tip: Bulgur is made by parboiling, drying and coarsely grinding wheat berries. Look for it in the natural-foods section of large supermarkets, near other grains.

DAILY TOTALS: **CALORIES** 1,482 **PROTEIN** 71G **CARBS** 149G **FIBER** 40G **FAT** 61G **SODIUM** 1,634MG

DAY 2

Breakfast

310 CALORIES

- 1 cup cooked oatmeal, prepared with water
- ⅔ cup blueberries
- 2 tablespoons chopped walnuts

A.M. Snack

185 CALORIES

- 24 unsalted dry-roasted almonds

Lunch

425 CALORIES

SERVINGS: 6

Meal-Prep Vegan Moroccan Lettuce Wraps

- 1 small clove garlic, chopped
- 1 teaspoon kosher salt, divided
- ½ cup extra-virgin olive oil
- ¼ cup lemon juice
- 2 tablespoons ground cumin
- ¼ teaspoon ground cinnamon
- 2 (15-ounce) cans dark red kidney beans, rinsed
- 1 (15-ounce) can chickpeas, rinsed
- 1 cup finely diced carrot
- 1½ cups chopped fresh parsley
- ½ cup chopped fresh mint
- 2 heads butter or Bibb lettuce, leaves separated
- 1½ cups cooked quinoa, cooled to room temperature

1. Sprinkle garlic with ½ teaspoon salt and mash with the side of a knife or with a fork to form a paste. Scrape the paste into a large bowl. Add the remaining ½ teaspoon salt, oil, lemon juice, cumin and cinnamon and whisk to combine. Stir in kidney beans, chickpeas, carrot, parsley and ⅓ cup mint.

2. To prepare 1 serving of lettuce wraps: Place 3 lettuce leaves in a single-serving lidded container. Top each leaf with 2 tablespoons quinoa and ⅓ cup beans.

P.M. Snack

112 CALORIES

- 6 ounces low-fat plain kefir

Dinner

502 CALORIES

Vegan Lentil Soup

ACTIVE: 20 MIN **TOTAL:** 1 HR
SERVINGS: 6

- 2 tablespoons extra-virgin olive oil
- 1½ cups chopped yellow onions
- 1 cup chopped carrots
- 3 cloves garlic, minced
- 2 tablespoons no-salt-added tomato paste
- 4 cups reduced-sodium vegetable broth
- 1 cup water
- 1 (15-ounce) can no-salt-added cannellini beans, rinsed
- 1 cup mixed dry lentils (brown, green and black)
- ½ cup chopped sun-dried tomatoes in oil, drained
- ¾ teaspoon salt
- ½ teaspoon ground pepper
- 1 tablespoon chopped fresh dill, plus more for garnish
- 1½ teaspoons red wine vinegar

1. Heat oil in a large heavy pot over medium heat. Add onions and carrots; cook, stirring occasionally, until softened, 3 to 4 minutes. Add garlic and cook, stirring constantly, until fragrant, about 1 minute. Add tomato paste and cook, stirring constantly, until the mixture is evenly coated, about 1 minute.

2. Stir in broth, water, cannellini beans, lentils, sun-dried tomatoes, salt and pepper. Bring to a boil over medium-high heat; reduce heat to medium-low to maintain a simmer. Cover and simmer until the lentils are tender, 30 to 40 minutes.

3. Remove from heat and stir in the dill and the vinegar. Garnish with additional dill, if desired, and serve.

SERVE WITH

- 1 serving Vegan Lentil Soup
- 2 cups mixed greens dressed with 1 serving Olive Orange Vinaigrette
- 5-ounce glass red wine

Olive Orange Vinaigrette

- ½ cup extra-virgin olive oil
- ¼ cup orange juice
- 2 teaspoons minced scallions
- 1 teaspoon minced pitted Kalamata olives

Pour oil into a mason jar. Add orange juice, scallions, olives and salt. Cover and shake to blend.

DAILY TOTALS: **CALORIES** 1,505 **PROTEIN** 51G **CARBS** 159G **FIBER** 37G **FAT** 67G **SODIUM** 1,249MG

DAY 3

Breakfast

286 CALORIES

- 1 serving Muesli with Raspberries

A.M. Snack

93 CALORIES

- 1 cup sliced cucumber
- 3 tablespoons hummus

Lunch

425 CALORIES

- 1 serving Meal-Prep Vegan Moroccan Lettuce Wraps

P.M. Snack

185 CALORIES

- 24 unsalted dry-roasted almonds

Dinner

533 CALORIES

Mediterranean Egg and Tomato Skillet with Pita (Shakshouka)

ACTIVE: 30 MIN **TOTAL:** 40 MIN
SERVINGS: 4

- **2 tablespoons olive oil**
- **2 cups chopped red sweet peppers**
- **½ cup chopped onion**
- **2 tablespoons no-salt-added tomato paste**
- **1 teaspoon smoked paprika**
- **2 teaspoons crushed red pepper**
- **3 cups chopped tomatoes**
- **1 teaspoon ground cumin**
- **¼ teaspoon salt**
- **4 eggs**
- **½ cup plain low-fat Greek yogurt**
- **Snipped fresh parsley**
- **2 whole-wheat pita bread rounds, halved crosswise and warmed**

1. In a 10-inch skillet, heat oil over medium heat. Add the next 5 ingredients (through crushed red pepper) and cook for 5 to 7 minutes or until onion is tender, stirring occasionally. Stir in tomatoes, cumin and salt. Bring to boiling; reduce heat. Simmer for 10 minutes or until tomatoes begin to break down.

2. Make 4 indentations in tomato mixture. Break an egg into a custard cup or small bowl and slip into an indentation. Repeat with remaining 3 eggs. Simmer, covered, 4 to 6 minutes or until whites are completely set and yolks begin to thicken but are not hard.

3. Top with yogurt and sprinkle with parsley. Serve with pita bread.

SERVE WITH

- **2 cups mixed greens dressed with 1 serving Olive Orange Vinaigrette**
- **5-ounce glass red wine**

DAILY TOTALS: **CALORIES** 1,524 **PROTEIN** 54G **CARBS** 160G **FIBER** 43G **FAT** 68G **SODIUM** 1,237MG

+

SHAKSHOUKA IS A NORTH AFRICAN DISH THAT IS USUALLY EATEN FOR BREAKFAST OR LUNCH.

DAY 4

Breakfast

310 CALORIES

- 1 cup cooked oatmeal, prepared with water
- ⅔ cup blueberries
- 2 tablespoons chopped walnuts

A.M. Snack

209 CALORIES

- 16 walnut halves

Lunch

425 CALORIES

- 1 serving Meal-Prep Vegan Moroccan Lettuce Wraps

P.M. Snack

50 CALORIES

- 1 cup sliced carrots

Dinner

526 CALORIES

Hearty Chickpea & Spinach Stew

ACTIVE: 20 MIN **TOTAL:** 30 MIN
SERVINGS: 4

- 2 (15-ounce) cans low-sodium chickpeas, rinsed, divided
- 1 tablespoon olive oil
- 12 ounces 93% lean ground turkey
- ½ teaspoon dried oregano
- ½ teaspoon fennel seeds, crushed
- ½ teaspoon crushed red pepper
- 1 medium onion, chopped (1 cup)
- 2 medium carrots, diced (¾ cup)
- 4 cloves garlic, minced, or ½ teaspoon garlic powder
- 3 tablespoons tomato paste
- 1 (32-ounce) carton low-sodium chicken broth (4 cups)
- ¼ teaspoon ground pepper
- ⅛ teaspoon salt
- 3 cups IQF (individually quick-frozen) spinach (8 ounces)
- ¼ cup grated Parmesan cheese (optional)

1. Mash 1 can chickpeas with a potato masher or fork. Set aside.

2. Heat oil in a large pot over medium-high heat. Add turkey, oregano, fennel seeds, and crushed red pepper; cook, crumbling with a wooden spoon, until the turkey is no longer pink, 2 to 3 minutes. Add onion, carrots, and garlic or garlic powder; cook, stirring often, until softened and fragrant, 3 to 4 minutes. Add tomato paste; cook, stirring, for 30 seconds.

3. Add broth, the mashed and whole chickpeas, pepper, and salt to the pot. Cover and bring to a simmer. Reduce heat to medium and cook, covered, at a brisk simmer.

4. Add spinach and increase heat to medium-high. Cook, stirring, until the spinach is heated through, 1 to 2 minutes. Ladle the soup into bowls. Garnish each serving with 1 Tbsp. Parmesan, if desired.

SERVE WITH

5-ounce glass red wine

DAILY TOTALS: **CALORIES** 1,521 **PROTEIN** 61G **CARBS** 155G **FIBER** 40G **FAT** 67G **SODIUM** 1,233MG

+

TO SIMPLIFY THE PREP, LOOK FOR CHOPPED FRESH ONION AND SHREDDED CARROT OR A SOUP-STARTER MIX IN THE PRODUCE SECTION.

DAY 5

Breakfast

288 CALORIES

- 1 serving Muesli with Raspberries

A.M. Snack

105 CALORIES

- 24 unsalted dry-roasted almonds

Lunch

425 CALORIES

- 1 serving Meal-Prep Vegan Moroccan Lettuce Wraps

P.M. Snack

16 CALORIES

- 1 cup sliced cucumber

Dinner

591 CALORIES

Chopped Power Salad with Chicken

ACTIVE: 20 MIN **TOTAL:** 30 MIN
SERVINGS: 4

- ¼ cup extra-virgin olive oil
- 3 tablespoons lemon juice
- 1 clove garlic, grated
- ½ teaspoon dried oregano
- ½ teaspoon sugar
- ¼ teaspoon salt
- ¼ teaspoon ground pepper
- 4 cups torn green-leaf lettuce
- 4 cups baby spinach
- 2 cups shredded cooked chicken
- 1 cup halved grape tomatoes
- 1 cup halved and sliced cucumber
- ½ cup slivered red onion
- ⅓ cup sliced pepperoncini
- ⅓ cup crumbled feta cheese
- 2 tablespoons toasted unsalted sunflower seeds

Whisk oil, lemon juice, garlic, oregano, sugar, salt and pepper together in a large bowl. Add lettuce, spinach, chicken, tomatoes, cucumber, onion and pepperoncini; toss to coat. Serve sprinkled with feta and sunflower seeds.

SERVE WITH

5-ounce glass red wine

DAILY TOTALS: **CALORIES** 1,505 **PROTEIN** 83G **CARBS** 130G **FIBER** 35G **FAT** 66G **SODIUM** 1,065MG

DAY 6

Breakfast

510 CALORIES

- 1 cup cooked oatmeal, prepared with water
- ½ cup blueberries
- 2 tablespoons chopped walnuts

A.M. Snack

51 CALORIES

- ½ cup blackberries

Lunch

513 CALORIES

Green Salad with Edamame & Beets

2 cups mixed salad greens
1 cup shelled edamame, thawed
½ medium raw beet, peeled and shredded (about ½ cup)
1 tablespoon plus 1½ teaspoons red wine vinegar
1 tablespoon chopped fresh cilantro
2 teaspoons extra-virgin olive oil
Salt and freshly ground pepper to taste

Arrange greens, edamame and beet on a large plate. Whisk vinegar, cilantro, oil, salt and pepper in a small bowl. Drizzle over the salad and enjoy.

P.M. Snack

231 CALORIES

- 30 unsalted dry-roasted almonds

Dinner

633 CALORIES

Salmon & Avocado Salad

ACTIVE: 30 MIN **TOTAL:** 30 MIN
SERVINGS: 4

½ cup loosely packed fresh dill, plus more for garnish
2 tablespoons water
2 tablespoons lemon juice
2 tablespoons white wine vinegar
1 teaspoon Dijon mustard
1 small clove garlic
2 avocados, chopped, divided
¼ cup extra-virgin olive oil, plus 1 teaspoon, divided
½ teaspoon salt, divided
4 (5-ounce) skinless salmon fillets
¼ teaspoon ground pepper
3 cups spring mix salad greens
2 cups thinly sliced red cabbage
1 cup matchstick carrots

1. Place dill, water, lemon juice, vinegar, mustard, garlic, ½ cup avocado, ¼ cup oil and ¼ teaspoon salt in a blender. Process until smooth, about 30 seconds. Refrigerate until ready to use.

2. Heat the remaining 1 teaspoon oil in a large cast-iron skillet over medium-high heat. Sprinkle salmon evenly with pepper and the remaining ¼ teaspoon salt. Add salmon to the pan; cook until golden on the bottom and mostly opaque around the sides, about 4 minutes. Carefully flip the fillets; remove from heat. Let the fillets stand in the pan until cooked through, 2 to 3 minutes.

3. Combine salad greens, cabbage, carrots and the reserved dressing in a large bowl; toss gently until evenly coated. Divide the salad among 4 plates; top with the remaining avocado. Top each salad with a salmon fillet. Garnish with additional dill, if desired.

DAILY TOTALS: **CALORIES** 1,518 **PROTEIN** 74G **CARBS** 97G **FIBER** 34G **FAT** 87G **SODIUM** 873 MG

COOKING THE CHICKEN, POTATOES AND GREENS IN THE SAME PAN MEANS MINIMAL CLEANUP.

DAY 7

Breakfast

288 CALORIES

- 1 serving Muesli with Raspberries

A.M. Snack

174 CALORIES

- 1 serving Everything Bagel Avocado Toast

Lunch

313 CALORIES

- 1 serving Green Salad with Edamame & Beets

P.M. Snack

235 CALORIES

- 1 cup carrots, sliced
- 24 unsalted dry-roasted almonds

Dinner

499 CALORIES

Skillet Lemon Chicken & Potatoes with Kale

ACTIVE: 30 MIN **TOTAL:** 50 MIN
SERVINGS: 4

- **3 tablespoons extra-virgin olive oil, divided**
- **1 pound boneless, skinless chicken thighs, trimmed**
- **½ teaspoon salt, divided**
- **½ teaspoon ground pepper, divided**
- **1 pound baby Yukon Gold potatoes, halved lengthwise**
- **½ cup low-sodium chicken broth**
- **1 large lemon, sliced and seeds removed**
- **4 cloves garlic, minced**
- **1 tablespoon chopped fresh tarragon**
- **6 cups baby kale**

1. Preheat oven to 400°F.

2. Heat 1 tablespoon oil in a large cast-iron skillet over medium-high heat. Sprinkle chicken with ¼ teaspoon each salt and pepper. Cook, turning once, until browned on both sides, about 5 minutes total. Transfer to a plate.

3. Add the remaining 2 tablespoons oil, potatoes and the remaining ¼ teaspoon each salt and pepper to the pan. Cook the potatoes, cut-side down, until browned, about 3 minutes. Stir in broth, lemon, garlic and tarragon. Return the chicken to the pan.

4. Transfer the pan to the oven. Roast until the chicken is cooked through and the potatoes are tender, about 15 minutes. Stir kale into the mixture and roast until it has wilted, 3 to 4 minutes.

DAILY TOTALS: **CALORIES** 1,508 **PROTEIN** 72G **CARBS** 139G **FIBER** 40G **FAT** 70G **SODIUM** 1,142MG

CHAPTER 2

Healthy Habits

A LIGHT MORNING WALK, A WEEKLY CROSSWORD PUZZLE AND NEW ROUTINES CAN HELP KEEP YOUR MIND YOUNG FOR YEARS TO COME.

THE DEEP SLEEP DIFFERENCE

A crucial aspect of shut-eye is linked to a sharper memory and works in tandem with a healthy microbiome. Here's why an R&R prescription could be just what the doctor ordered.

BY JESSICA BALL AND KARLA WALSH

Sleep is a critical factor in overall health and well-being. Getting enough sleep can improve heart health and the immune system, clear skin and promote weight loss. And sacrificing sleep can lead to some undesirable consequences: It can impair your memory, impede your focus and increase your risk for several chronic illnesses. Recent research has found that not catching enough zzz's could also increase your risk for Alzheimer's disease and dementia.

A recent study published in *Nature Communications* took a look at how sleep and the lack it influenced instances of dementia in middle-aged and older adults. Researchers followed the sleep habits of almost 8,000 participants for 25 years. They found that for people ages 50 to 70, regularly sleeping less than six hours per night was associated with a 30 percent increased risk of dementia, independent of sociodemographic, behavioral, cardiometabolic and mental factors. Though the study was large and had a long follow-up period, it did not determine whether the relationship between sleep and dementia is cause-and-effect. But it does illuminate that persistent inadequate sleep can leave your brain vulnerable as you age.

Dial Up the Deep Sleep

The Alzheimer's Association estimates that 12 to 18 percent of Americans 60 and older experience some form of mild cognitive impairment (MCI), which often progresses to an officially diagnosable form of dementia, including Alzheimer's disease. New research published in *PLOS Biology* adds another brain-benefiting tip to the Alzheimer's-prevention arsenal: deep sleep.

ADULTS SHOULD SPEND 16 TO 20 PERCENT OF THEIR SLEEP TIME IN DEEP SLEEP.

Penn State University scientists discovered that sleep-dependent brain activity—the kind that occurs during deep, restful non–rapid eye movement (NREM) sleep—can help the body excrete toxic proteins related to Alzheimer's disease.

Extensive research suggests that one way Alzheimer's disease develops is when levels of the proteins beta-amyloid and tau build up in the brain. This often occurs over the course of 10 to 20 years prior to an official diagnosis. The 2021 Penn State research is not the first that hints at the brain-protein-and-sleep link: In 2018, scientists found that a single night of sleep deprivation increases the beta-amyloid load within the brain.

The cerebrospinal fluid (CSF) can usher these waste products out of the body through the glymphatic system, which is part of the central nervous system. Glial cells in the brain team up with blood vessels to help protect neurons from physical and chemical damage. If the glymphatic system can't drain this "brain waste" effectively, the extracellular accumulation of the proteins could progress to Alzheimer's disease.

But deep sleep might help the brain wash away these Alzheimer's-related toxins. During NREM sleep, the kind that occurs when it's really tough to wake up because you're so fully "off," the brain creates slow, steady electrical waves that act as an internal cleaning mechanism.

"Our study linked the coupling between the resting-state global brain activity and [CSF] flow to Alzheimer's disease pathology," coauthor Xiao Liu, PhD, an assistant professor of biomedical engineering at Penn State, told *Medical News Today*. "The finding highlights the potential role of low-frequency [less than 0.1 hertz] resting-state neural and physiological dynamics in the neurodegenerative diseases, presumably due to their sleep-dependent driving of [CSF] flow to wash out brain toxins." The study's authors caution that this is not yet a proven cause-and-effect scenario, but they do recommend that sleep analysis be added to Alzheimer's disease–detection protocol.

The Gut Health Impact

If you're struggling to sleep as well as you used to, it could be the TV, sure. It could also be the stress and anxiety of the world we live in. Or it could be your microbiome, hints new research out of Japan. This study, which was published in the journal *Scientific Reports,* used mice. Still, it might have some parallels in humans and could direct the course of future research.

The study, led by Masashi Yanagisawa, a professor at the University of Tsukuba in Japan, involved two groups of mice. One group ate a standard diet and took no medication, while the other half took a "powerful cocktail of antibiotics" for four weeks, according to a recap of the results from the university. Yanagisawa and his team then compared the gut bacteria of the two populations and found in them a vast difference in the quantity of metabolites, what food is broken down into as part of digestion. In particular, the mice who had taken antibiotics had very different neurotransmitter levels than normal—and as a result, they had much more tryptophan than the controls but almost zero serotonin.

Lacking important gut microbes like prebiotics and probiotics, the mice couldn't make any serotonin from the tryptophan they were eating. The antibiotic-treated mice were also lacking enough vitamin B_6 metabolites, which boost production of the neurotransmitters serotonin and dopamine.

Here's where the sleep link comes in. Analysis of each mouse's sleep and brain activity via EEG showed that the microbiota-depleted mice had more REM and NREM sleep at night. Unlike humans, mice are supposed to be up and at 'em at night and sleep during the day, so these were the reverse of their normal pattern. (So if this research translates to humans, we'd expect people with poor gut health to feel sleepy during the day but restless at night.) The microbiota-depleted mice also switched between sleep/wake stages more frequently than the controls—in other words, they had less sound high-quality zzz's.

Yanagisawa believes that the missing serotonin may be causing the sleep abnormalities but admits that more research is needed. "We found that microbe depletion eliminated serotonin in the gut, and we know that serotonin levels in the brain can affect sleep/wake cycles," he said in the report. "Thus, changing which microbes are in the gut by altering diet has the potential to help those who have trouble sleeping."

As the scientific community continues to build a more comprehensive gut-health knowledge encyclopedia, it certainly can't hurt to prioritize your own gut health if you're noticing that it's becoming more of a battle to snooze at night, or that you feel drowsy during the day—especially if your eating, drinking and lifestyle habits haven't changed much recently.

We do know that even without antibiotics, our modern lifestyle can affect our good gut bugs. And a healthy microbiome doesn't just impact our digestion and sleep; it's also been linked to lower risk of brain decline.

A great place to start is to eat more plants, as they feed the good bugs in our gut much more than animal foods do. Fermented foods such as kimchi, yogurt and sauerkraut offer probiotics, while raspberries, garlic and beans supply prebiotics.

The microbiota-depleted mice switched between sleep/wake stages more frequently than the controls, and they had less sound high-quality zzz's.

Good Sleep Hygiene

A bad night of sleep here and there doesn't mean you'll get dementia, but it's clear that working to build healthy sleep habits is important. There are a few ways to practice good sleep hygiene, according to doctors and experts.

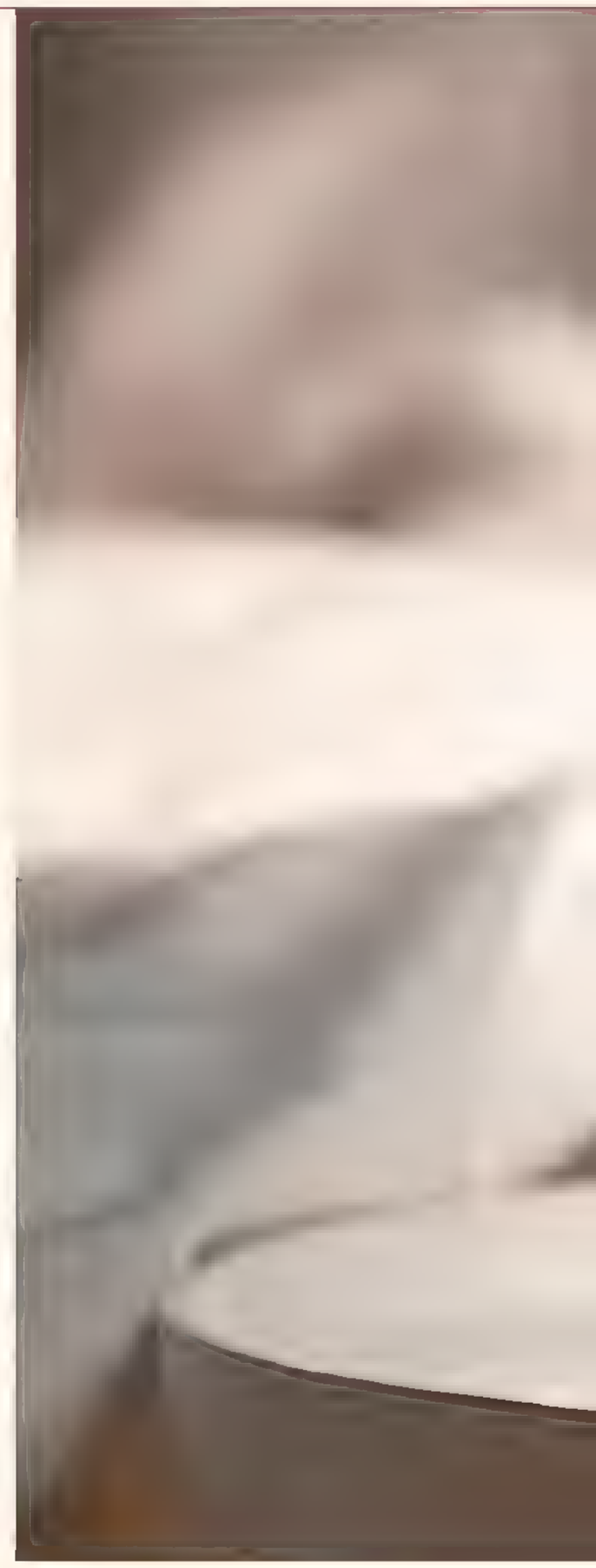
Keeping a regular sleep-and-wake schedule can help your body get into a routine and make it easier to fall asleep at night and wake up rested. Skipping alcohol late at night and waiting an hour after waking before you gulp down coffee in the morning can also help you fall asleep more soundly and avoid a crash midday. Also, certain foods can help with sleep, including fiber-rich foods, fish, fruit and whole grains.

Finding a sustainable sleep schedule is important for your health and can help cut down on your dementia risk as you age. ●

4 Tips from a Sleep Doctor

A clinical psychologist offers his research-backed advice for a sound night's rest.

BY KARLA WALSH



Many of us resolve to sleep better, and actually doing so can do wonders for our brain health. Getting the recommended amount of sleep on a regular basis can improve our mental health, energy levels, immunity, weight management and more. We chatted with Michael A. Grandner, PhD, director of the Sleep and Health Research Program at the University of Arizona College of Medicine, to see what we should be doing to help facilitate improved sleep quality. He provided some fascinating insight into how our everyday routine affects how we sleep. Here are Grandner's four tips on how to sleep better.

1. Hold off on your morning cup of coffee

We know this one might sting a little—but Grandner advises holding off an hour or more after waking to drink coffee for a true pick-me-up. "Many people caffeinate first thing in the morning to assist with their 'waking up' process, but this typically happens naturally," Grandner says. "We have a process called sleep inertia, which makes us very sluggish as soon as we wake up. But this should fade quite quickly if we get up and moving, maybe in 10 to 30 minutes. If you're drinking coffee right away, you will start to feel better not because of the coffee, but because of the natural decline in sleep inertia." Grandner also notes that caffeine takes 20 to 40 minutes to produce its effects, so depending on coffee for an instant pick-me-up is more of a placebo effect than anything else. He says to wait until late morning—around 9 or 10 a.m.—before pouring yourself a cup of joe. It will kick in right when you're having that afternoon dip, and the rush will clear up before it can interfere with your bedtime.

2. Consider intermittent fasting

Not only could drinking your coffee later in the morning help you get proper sleep, but waiting to eat your breakfast could as well. It doesn't have to be as rigid as some of the intermittent fasting techniques you may have heard of, though. "Evidence is emerging that we should keep our food intake to a 10- to 12-hour window from first bite to last bite," Grandner says. While the popular 16:8 intermittent fasting method—where you eat within an eight-hour window and then fast for 16 hours—is vastly different from the way most of us eat, it wouldn't take too much effort to fit your eating within 10 to 12 hours each day. This might mean eating dinner a little earlier than usual, or closing the kitchen instead of relying on midnight snacking. Adds Lisa Valente, RD: "This doesn't mean wait until noon to have your first meal. A 10-hour window could be 9 a.m. to 7 p.m., which you may already be close to doing naturally." Says Grandner, "Most Americans snack at night—this is a problem for a couple of reasons. First, the foods we crave often tend to be more high-calorie, less-nourishing foods. This is especially problematic because calories at night are more likely to disrupt metabolic processes and lead to weight gain. Also, heavy foods at night can cause reflux and possibly interfere with sleep for other reasons."

3. Avoid alcohol late at night

Having a glass of wine at dinner shouldn't be a problem—in fact, it could be healthy for you—but Grandner advises

steering clear of alcohol closer to bedtime. "Alcohol can help you fall asleep, but it decreases the quality of your sleep and can even cause shallow sleep and awakenings," he explains. "This can be more pronounced in people who are sensitive to alcohol's effects or those who have more than one or two drinks close to bedtime." Sound familiar? It's common for our favorite vino to lull us to sleep only to leave us dozing fitfully.

4. Create a sustainable routine

According to Grandner, achieving a good night's sleep starts the minute you wake up. He advises getting up and starting your day immediately upon waking—no lingering in bed or playing on your phone. Grandner's rule of thumb is that your bed should be for sleep and sex only. (Looks like the snooze button has been an enemy in disguise the whole time!) Following a regular schedule is important for keeping your circadian rhythm the same every day. Besides getting out of bed right away each morning, Grandner advises getting plenty of natural light and exercise when the day allows, along with giving yourself time to relax before getting under the covers later: "One of the biggest mistakes I see is people not giving themselves enough time to wind down. The busier we are during the day, the more time we need in the evenings to wind down and prepare for sleep." Following a healthy sleep routine could mean putting your phone away 30 minutes before bed and cracking open a good book instead of scrolling through social media or email. You could also take some time to stretch while you watch one episode of your favorite show on Netflix—instead of five.

The bottom line

Caffeine and alcohol seem to play major roles in how well we sleep, and adjusting our morning cup of coffee and nightcap are two easy steps toward sleeping better. Creating a sleep schedule with streamlined morning and nighttime routines can seem daunting at first—especially if you work irregular hours or have a family with varying sleep schedules to care for—but research shows it can have some major benefits for your overall health. When it comes to intermittent fasting, it's important to find eating habits that are truly sustainable for your personal lifestyle. Eating within a 12-hour window could be a good option if you're prone to snacking late at night or have a similar daily schedule, but don't beat yourself up over eating dinner an hour or two later sometimes. Focus on nourishing your body with healthy foods because many of the nutrients—such as magnesium—will help regulate your sleep.

SIMPLE STRATEGIES TO AID YOUR BRAIN

From gardening to green tea, these brain-health tools will help bolster your thinking, mood, memory and more.

BY MARKHAM HEID AND MARNIE SCHWARTZ

Scientists used to believe that once we reached adulthood, our brain couldn't change. But "we now know that our brain can continue to grow throughout life, and that our habits and choices can shape that process," says Allan J. Hamilton, MD, a neurosurgery professor at the University of Arizona and a coauthor of the new edition of the book *Younger Next Year*. Here are some of the best ways to boost and strengthen your brain health.

Meditate to Work Through Discomfort

Meditation boosts your brainpower from every angle. It helps you de-stress, increases your memory and improves your ability to focus. It can also help your brain in a way that helps your workout: Zenning out gives your brain better control over processing pain and emotions,

according to a study in the journal *Frontiers in Human Neuroscience*. After four 20-minute sessions, participants who were touched on the calf with a piece of metal heated to 120 degrees reported it 40 percent less painful and 57 percent less uncomfortable than before their training. Those kinds of numbers could get you pretty far when you're at mile 25 of a marathon or only halfway through your last set of burpees.

Use Your Left Hand to Stoke Creativity

The right side of your brain includes your creativity centers. It also controls the left side of your body. By using your left hand to write or to brush your teeth, you can boost activity in that right hemisphere, which can improve your creativity scores nearly 50 percent, according to a study from Israel. The study's authors say that just clenching and unclenching your left hand could improve some other brain functions, such as verbal and spatial ability.

Tend a Garden to Boost Your Mood

People suffering from depression had significantly improved moods after three months of digging, planting, picking and watering a garden for six hours a week, shows a study from Norway. A lot of research has linked spending time in nature to lower stress levels and improved mood, the authors point out. And researchers from the University of Bristol say exposure to some microorganisms in soil could trigger the release of serotonin—the feel-good brain chemical.

Strength Train to Strengthen Memories

Hitting the gym more consistently is another key way to support your brain health. Research shows that 20 minutes of resistance exercise can boost your episodic memory performance (long-term memory about specific events), according to a study out of the Georgia Institute of Technology. When people pumped iron right after looking at photos, they remembered 10 percent more about the pictures two days later than those who didn't hit the gym. And it's not just weights that offer benefits—the researchers say that body-weight exercises would likely produce the same kind of memory-boosting benefits.

Play Some Tetris to Improve Your Mind's Efficiency

Manipulating tumbling blocks for a few minutes a day can expand your brain's stockpiles of gray matter, according to research from the University of California, Irvine. The gray matter contains most of your brain's neurons, which are involved in all mental tasks. Like a muscle that's been strengthened with weights, pumping up your gray matter with Tetris is like injecting more power into your noodle, the research

suggests. So when you have a bit of downtime, sit down and play for 15 minutes.

Nap to Solidify Your Memory

After 40 minutes of sleep, people improved their scores on a memory game by 25 percent compared with those who hadn't had a quick snooze, shows German research. While short-term memories are stored in the hippocampus, they're fragile and easily lost, the study's authors say. Sleep somehow transfers new memories to your neocortex, where they're stored more permanently, improving your ability to recall them, the authors explain. So by all means, take a quick power nap if you can—it will do your brain health some good.

Run to Multitask Better

Sedentary adults who started running a few days a week improved their ability to juggle different tasks by 30 percent, according to research from the University of Texas at Dallas. Exercise increases blood flow, which helps saturate your brain with the

GREEN TEA CAN HELP REDUCE STRESS AND BOOST YOUR MOOD.

oxygen and nutrients it needs to operate at its best, the study's authors say. Any physical activity done regularly should benefit your brainpower, they add.

Text More for Better Motor Skills

You may think technology at your fingertips is hurting your brain, but swiping on a smartphone can actually strengthen your brain health: The thumb dexterity you develop using a touchscreen increases the activity and size of certain areas of your brain, reports a new study in the journal *Current Biology*. Compared to flip phone users, smartphone users had completely different activity in their cerebral cortex—the part of the brain associated with voluntary movement, coordination of sensory information, and learning and memory.

Work Out Harder to Make Decisions Easier

Compared with sedentary participants, people who exercised had 32 percent higher levels of a brain-derived protein known as BDNF, believed to help with decision making, higher thinking and learning. And those who worked at a vigorous intensity (80 percent of their maximum heart rate) and for more than 40 minutes had the most significant BDNF elevation, according to a study from Weber State University in Utah.

Drink Water to Speed Reaction Time

Compared with thirsty people, reaction times jumped 14 percent among a better-hydrated group. Even mild dehydration appears to suck resources from your brain, according to research published in the *Journal of Nutrition*. Water is so important for survival that your brain's "Drink something!" warning system, which fires up when you're thirsty, may draw resources from the rest of your noodle. The best way to monitor dehydration—and keep your brain health in check—is to track your urine. If you haven't gone for several hours, or if your output is yellow (not clear), drink up.

Change Your Routine to Boost Brainpower

Whether you spend your free time scrolling through TikTok's food hacks or watching Netflix, doing the same mental tasks over and over again reinforces your brain's synaptic connections related to those activities. That helps you

get better (and requires less brainpower), according to research from McGill University. But as those synaptic connections grow stronger, the rest of your brain sits idle, becoming weaker, the researchers explain. To counteract this effect, switch up your routines—everything from your workout to your day-to-day activities, suggests a study from Concordia University. Even taking an unfamiliar route to work or cooking your dinner a different way helps fire up dormant brain pathways, which could increase IQ, studies suggest.

Eat Sage for Better Recall

An hour after ingesting sage, women's scores on a word-recall task jumped 35 percent. The U.K. researchers who did this study point to an antioxidant chemical called acetylcholine. Lower levels of acetylcholine have been charted among Alzheimer's patients, and additional research has tied it to memory function. The people in the study swallowed just 50 microliters of sage oil in capsule form—an amount so small that eating the herb in almost any amount should help your brain health.

De-Stress to be Less Forgetful

Those moments when you can't remember where you put your keys or that lunch date you were supposed to have? Thank your hectic schedule. "Most short-term memory loss is stress-related," says Carolyn Brockington, MD, director of the

Stroke Program at St. Luke's–Roosevelt Hospital in New York City. "We're all running around doing a million things, and although many people think they can multitask well, the brain sometimes has trouble moving from one thing to another and back again."

In order to commit something to memory and keep your brain health in check, you need to be able to concentrate more, and that means making self-care a priority.

Stay Connected to Support Overall Brain Health

"The brain is a social organ," says Dr. Hamilton. In a study from the Massachusetts Institute of Technology, when participants who were completely isolated for a period of time were shown pictures of people interacting, there was activity in their substantia nigra, a part of the brain that has been linked with hunger. "This suggests that our brains are very sensitive to the experience of being alone and that social contact is a basic need," says study author Livia Tomova, PhD.

"Tons of hormones and peptides are released with human contact," explains Dr. Hamilton. When we're deprived of that interaction, inflammatory markers rise and brain hormones and neurotransmitters can diminish, and well-being can deteriorate, he says.

To connect with loved ones who might not live nearby, Dr. Hamilton recommends scheduling regular video calls rather than texting. Seeing a face and hearing a voice triggers your brain to release feel-good hormones, he says.

Changing routines such as how you cook or drive to work can help fire up dormant brain pathways.

Challenge Yourself to Help Your Brain Grow

"The brain loves to be pushed," says Dr. Hamilton. So while working on crosswords might be fun, what your brain is actually after is the tough stuff. For instance, learning a new language may help it grow, particularly in areas that involve flexible thinking, attention and memory, one study found.

And consider piano lessons, or learning another instrument: People who played an instrument in midlife generally did better on cognitive-ability tests in their later years than nonmusicians, according to other research. Playing music may make your brain more efficient, so it's able to stay nimble even in the face of age-related changes, says study author Sebastian Walsh, a researcher at the University of Cambridge. These activities, as well as having an intellectually demanding job, can stimulate the release of neurotropic factors and push the brain to maximize its ability to form new connections, adapt and change, says Dr. Hamilton. ●

MOVE YOUR BODY, MAINTAIN YOUR MIND

Research shows regular exercise can reduce your risk for cognitive decline, Alzheimer's disease and more. Here's the best way to get your blood pumping, according to brain-health experts.

BY JULIE FLOYD JONES

According to the World Health Organization, nearly one in six people worldwide are living with a neurological disorder. In the United States alone, approximately 5.8 million people are currently living with Alzheimer's disease, and 1 million are living with Parkinson's disease.

There's a wealth of research showing that exercise is good for brain health. One recent study in the journal *Behavioural Brain Research* found that exercise improved both brain health and behavior, improved the growth and development of neurons in the brain, and reduced toxicity and buildup of proteins on the walls of the arteries of the brain.

To get insight into the research and a better understanding of the role that exercise plays in keeping our brain healthy and in reducing cognitive decline, we turned to Marat Reyzelman, MD, a specialist in neurology and clinical neurophysiology at Wellstar Health System, and Ebony Glover, PhD, director of the Affective Neuroscience Laboratory and associate professor of neuroscience at Kennesaw State University.

How Exercise Benefits Brain Health

Most of us know that getting regular exercise is one of the best ways to keep our body healthy. Research shows the value of exercise in reducing the risks of heart disease, stroke, diabetes and cancer. And yet we often overlook the role that exercise plays in keeping our brain healthy.

Dr. Reyzelman emphasizes why we must look at exercise as an essential element in maintaining a healthy brain. "Studies have shown that in adults who exercise regularly, there is a significantly reduced rate of brain tissue atrophy as well as signs

REGULAR YOGA OFFERS MENTAL, EMOTIONAL AND OVERALL WELLNESS BENEFITS.

of vascular tissue injury and silent stroke based on MRI imaging. There is also increased thickening of various parts of the brain cortex—areas vital for memory and thinking functions. In essence, exercise causes patients to maintain or even gain cells in important brain areas, whereas lack of exercise causes an increase in the rate of age-related brain cell loss."

One of the reasons exercise is so beneficial is the increased oxygen we take in during a workout. Explains Glover, "The brain is one of the heaviest oxygen consumers in the body. A higher supply of oxygen to the brain has been shown to positively affect cognitive processes such as learning and memory."

These cognitive processes are neurogenesis and neuroplasticity. Neurogenesis is the growth, development and maintenance of new brain cells; neuroplasticity is our brain's ability to grow new connections to make up for the deterioration of brain cells throughout our life. Oxygen is vital for both, and regular exercise promotes increased oxygen supply.

Dr. Reyzelman agrees that the increased blood flow and oxygen delivery that exercise provides are vital to improving memory, cognition, attention and focus, in large part due to their role in keeping the hippocampus healthy. "Studies show that our hippocampus, the part of the brain that is responsible for memory function, receives increased blood flow and oxygenation when we engage in regular physical exercise. This has been shown in studies to improve cognitive performance across all age groups," he says.

In addition, Dr. Reyzelman says, there is a link between brain health and heart health, and one of the ways exercise improves the brain is by improving the health of our cardiovascular system. "Patients who have heart disease are significantly more likely to develop stroke and dementia," he says. "Physical exercise, by helping to improve our heart health, results in lowering the risk of stroke and neurodegenerative conditions such as Alzheimer's disease. It has also been shown to slow down progression of other neurodegenerative disorders, such as Parkinson's disease."

According to Dr. Reyzelman, there is also a link between brain health and increased levels of inflammation and stress. Regular exercise has been shown to reduce both inflammation and the production of stress hormones such as cortisol—both of which are associated with increased tissue injury in the brain and accelerated brain aging.

In addition, he points out that when we exercise, we increase the brain's production of the endorphins and neurotransmitters that help improve our overall sense of physical and mental well-being.

How to Exercise for Brain Health

As a certified personal trainer, part of my job is to create the right mix of exercises to address each client's goals and concerns. Incorporating variety in the types of exercises I include in a given client's program is just one way to achieve this. The same can be said for exercise programming for brain health. According to our experts, there is value in variety, and we should look to incorporate exercise in three key areas for the greatest impact: aerobic exercise, strength or resistance training, and yoga or mindfulness practice.

The term *aerobic* means "with oxygen." Knowing the importance of increasing oxygen to the brain to promote neurogenesis and neuroplasticity, it's no wonder that aerobic exercise would be at the top of the list of the kinds of exercise to include in your routine. "Studies show that both aerobic and anaerobic exercises can have positive brain health benefits," Dr. Reyzelman says. "However, aerobic exercises such as running, walking briskly on a treadmill, rowing, swimming or riding a bike have more studies to support their positive effects on brain health. Combining aerobic [cardiovascular] exercise with some lightweight [strength] exercises may provide the greatest benefits."

Strength or resistance training includes any physical exercise that uses resistance—typically your body weight, free weights or machines—to cause a muscular contraction that builds strength and anaerobic endurance. There is evidence to suggest that including resistance or strength training is beneficial to promoting a healthy brain.

A recent study found that individuals who participated in a strength training program showed overall benefits in cognitive performance and protection from degeneration in regions of the hippocampus, the brain's center for learning and memory. Participants completed 90 minutes of strength

training exercises each week, typically broken down into two or three sessions. They followed this regimen for six months, and the positive impact was still visible up to one year later.

Yoga has long been a method of exercise associated with providing mental health benefits. Numerous studies indicate that yoga may be used as an effective tool for reducing anxiety, depression and stress. With its focus on deep breathing and using body weight to build strength, flexibility and mobility, it's also an excellent choice for promoting a healthy brain. Research suggests that practicing yoga can enhance brain function and structure, positively impacting the function of the hippocampus, and may help to reduce age-related declines in brain health.

How Much Exercise Do We Need?

"The more exercise, the better, but some physical activity is better than none," says Dr. Reyzelman. While there are studies that show we receive the greatest cardiovascular benefits—remember the link between heart health and brain health—when we exercise at least five hours each week, he suggests that at a minimum, we should get two and a half to three hours of exercise each week, with at least 30 to 45 minutes in each session.

"Starting slowly and building your stamina over time will likely result in the greatest benefits," he says. "For those starting an exercise routine after a long period of inactivity, I recommend seeing a physician and discussing a customized approach before beginning an exercise program."

By taking care of our body—our cardiovascular system, our musculoskeletal system and our stress response—we are also taking care of our brain.

"Exercise has been shown to benefit patients with neurologic disorders such as migraine, dementia, Parkinson's disease, stroke, multiple sclerosis, depression and anxiety, chronic pain and sleep disorders, to name a few," says Dr. Reyzelman. Glover adds, "Research shows that older adults who live more physically active lifestyles tend to have higher cognitive function compared with older adults who live more sedentary lifestyles." Taking steps each day to slow down or delay cognitive decline through regular exercise also improves overall health and well-being. ●

Starting Small

You don't have to be an Ironman to have a strong, sharp brain.

BY KARLA WALSH

Did you know the most popular New Year's resolution year after year is to exercise more? While that's a valiant goal, more is not always better—especially if you set such a lofty goal that you can't stick with it, subsequently feel like a failure and quit trying.

But you might not need to focus on going from 0 to 100 to benefit your body and your brain. Lightly active adults reduced their risk of dementia by a sizable 20 percent after a 3½-year follow-up compared with their inactive peers, according to a study published in the journal *JAMA Network Open* in 2021.

This echoes recent research that found walking just three times per week could reduce dementia risk, and builds on 2019 research that suggested 10 minutes of moderate-intensity exercise per day could protect against cognitive decline.

So what exactly does "light physical activity" look like? According to this study, it's as light as walking at a slow or leisurely pace.

There's no cure (yet) for dementia and its most common type, Alzheimer's disease. So doctors are hustling to determine which lifestyle habits may reduce the risk or at least delay the onset of dementia.

For the study published in *JAMA Network Open*, a team of Korean researchers tapped into medical records in the Korean National Health Insurance Service database for 62,286 participants who were 65 or older and who had not yet received a dementia diagnosis. The individuals were about 60 percent women and 40 percent men, with an average age of 73. Each person recorded his or her physical activity, including frequency, intensity and duration, via a self-reported questionnaire. After 3½ years, on average, the researchers followed up and found that 6 percent of the participants had developed dementia.

Using these reports, the researchers then split the group into levels: inactive, insufficiently active, active and highly active. In terms of dementia risk, after accounting for age, sex and other diseases and using the inactive participants as a baseline, they found that insufficiently active

GETTING OUTSIDE FOR A LEISURELY WALK HAS PROVEN BENEFITS FOR YOUR MENTAL HEALTH.

participants were at 10 percent lower risk for dementia, active participants were at 20 percent lower risk, and highly active participants were at 28 percent lower risk. That means even a little bit can go a long way in terms of exercise's bang for your brain buck.

Moving from sedentary to just some "light-intensity physical activity is associated with metabolism, and this vascular, cellular and metabolic change by light-intensity physical activity could be beneficial in reducing dementia risk," Boyoung Joung, MD, a professor of internal medicine at Yonsei University College of Medicine in Seoul and the study's corresponding author, told *Medical News Today.*

That said, the study does not prove any causal link. In other words, are people who are likely to develop dementia naturally less active because they're already experiencing some mild symptoms? Or could other factors be at play, and the exercise rates are just a coincidence—or were they misreported, since participants could have lied on their questionnaires?

"The idea that physical activity reduces the risk of dementia is entirely plausible, and these findings add to a growing body of evidence supporting that idea," John Gallacher, PhD, director of Dementias Platform UK at Oxford University, told *Medical News Today.* "The problem is reverse causation—that is, that people with dementia exercise less. This study goes some way to addressing this by looking at incident events and dropping subjects with incident dementia in the first two years of follow-up."

Health experts believe that more than one in three dementia cases can be prevented through lifestyle modifications, and researchers hope to dedicate time to longer-range studies with more breakouts in terms of exercise styles, time and beyond.

GET AHEAD OF GENETICS

If you have a family history of dementia or Alzheimer's, taking care of your brain as you age is crucial for reducing your own risk. Start by incorporating these lifestyle changes.

SARAH ANZLOVAR, RDN, LDN

Having a family history of a brain disease like Alzheimer's can feel a bit scary, especially if you've witnessed a loved one develop symptoms and progress through the disease. Like other health concerns, a family history of Alzheimer's or another form of dementia naturally puts you at a higher risk of developing one of these conditions. But it's just one risk factor, and just because your grandmother (or parent or sibling) had dementia, it's not all doom and gloom for you. The good news is that there's a lot you can do to reduce your chances of developing dementia—and it's never too early to start. Lifestyle factors such as what you eat, your exercise habits, your alcohol consumption and your sleep habits have been shown to play a role in risk of dementia and Alzheimer's, independent of your family history.

It's never too early (or too late!) to start taking care of your brain (and body), so whether you're 25 or 60, if you have a family history of dementia, start implementing these lifestyle tips to protect your brain.

Eat Like They Do in the Mediterranean

The Mediterranean diet, which emphasizes fruits, vegetables, whole grains, beans and legumes, nuts and seeds, fish, olive oil and other healthy fats and limits red and processed meats, added sugars and processed foods, has been shown to both slow the progression of Alzheimer's and prevent it. "In one study of 116 cognitively normal individuals, those who followed the Mediterranean diet developed thicker cortical brain regions versus the control group," notes Sanjiv Lakhia, DO, a board-certified physiatrist with expertise in brain and spine rehab.

The foods that make up the Mediterranean diet are packed with nutrients that have been shown to boost brain health—from the antioxidants in fruits and vegetables to the healthy fats in nuts, seeds and fish. Researchers recommend consuming at least 1,000 mg of omega-3s (specifically, DHA) every day. Fatty fish—a major component of the Mediterranean diet—is one of the best food sources of DHA.

Get Regular Exercise

As if there weren't already enough reasons to move your body regularly, here's another: It's really good for your brain. Cardiovascular exercise has been shown to ward off development of dementia and Alzheimer's, as well as slow progression of these diseases among those who have shown early signs. Aerobic exercise turns on the DNA in your genome that codes for the production of the brain's growth hormone.

"Interestingly, weight or resistance training seems to offer potential benefits in addition to those seen from cardiovascular exercise," says Nate Bergman, DO, codeveloper of the Brain Health Program at the Cleveland Clinic Center for Functional Medicine. Both body-weight exercises (like push-ups and squats) and weight training count, so you don't need an expensive gym membership to reap the benefits—doing a handful of exercises a couple of times per week is likely all you need.

Make Sleep a Priority

Not surprisingly, sleep plays an important role in your brain health as you age. Lack of sleep not only can affect your daily function, but it may increase your risk for dementia. "Good sleep protects your brain by cleaning and refreshing the components," says Bergman.

Both quantity and quality matter. A study in the journal *Sleep* found that getting less than six hours of sleep a night was associated with reduced cognitive

function and increased risk for Alzheimer's disease, whereas poor sleep quality leads to deficits in synaptic plasticity and memory processes, which adversely affect cognition and memory.

"The two most common sleep problems are insomnia and sleep apnea. People with these conditions do not click through all the various stages of sleep, often missing critical stages, such as deep and REM sleep," adds Bergman. "Full sleep cycles are necessary to reduce inflammation and pruning of brain cells related to memory."

Aim to get seven to nine hours of good-quality sleep per night. If you have trouble falling asleep or staying asleep, try creating a simple bedtime routine. To help your brain prepare for sleep, stop using any sort of technology with blue light (TV, phone, computer) an hour before bedtime, and avoid caffeine later in the day. If you're still waking up exhausted after a full night of sleep, talk to your doctor about getting tested for sleep apnea.

Keep Your Brain Engaged

You may have heard that doing crossword puzzles is good for the aging brain, and it's true! With aging, alteration occurs in various regions of the brain, such as the prefrontal cortex, medial temporal lobe, hippocampus and cerebellum. These changes are linked to Alzheimer's disease and dementia. They lead to impairment in cognitive functions such as speed and executive functions, and also short-term and long-term memory loss. It turns out that brain games—such as quizzes, crossword puzzles and word problems—can help prevent these age-related changes and improve cognitive function.

A study in *Brain Imaging and Behavior* showed that people who frequently participate in brain activities display greater gray matter in the brain and exhibit higher cognitive scores. Both of these things are connected to the prevention of Alzheimer's disease and better cognitive function as we age.

If crosswords just aren't your thing, don't stress. Reading, learning a new skill or hobby, taking a class or anything else that stimulates your brain is beneficial.

Try Meditating

Meditation isn't just for yogis, and the benefits expand far beyond relaxation (though that's helpful, too!). It is a nonpharmacological therapy aimed to prevent cognitive decline in older adults. Research has shown that meditation, especially when paired with other lifestyle factors, like a healthy diet and exercise, may ward off the development of Alzheimer's disease.

Mindful meditation, when practiced regularly, strengthens the connections between areas of the brain associated with attention and concentration. It also improves focus by increasing neuroplasticity of your brain.

If the idea of sitting with your legs crossed and your eyes closed while attempting to quiet your brain is overwhelming or even anxiety-inducing, know that meditation can be done in a variety of ways. Start with a guided meditation of just a couple of minutes per day using one of the many apps available, such as Calm. It may even promote better sleep—a double whammy for a healthy brain.

Brain games such as quizzes, crossword puzzles and word problems can help prevent age-related changes and improve cognitive function.

Smoking and Drinking

Smoking puts you at an increased risk for almost every health concern, including brain-related diseases. "Smoking contributes to impaired blood flow and increased cerebral oxidative stress, promoting Alzheimer's disease–related brain pathology," says Lakhia.

When it comes to alcohol, the research is mixed, but one drink a day is probably a safe amount. One study showed that both alcohol abstainers and those who had two or more drinks per day were at increased risk for dementia and cognitive decline. If you don't drink, there's probably no benefit in starting, but if you do, keep it to one drink a day, max (and red wine may be your best choice).

Many of the things we do to take care of our body are also good for our brain. To reduce your risk of age-related brain disease, it's all about what you do consistently over time, so start making small changes today. Every healthy behavior adds up! ●

IF YOU HAVE WRITER'S BLOCK, JOURNAL ABOUT GRATITUDE. IT SHOULD LIFT YOUR SPIRITS AND EASE SELF-DOUBT.

WRITE IT DOWN

According to mental health professionals, journaling can improve anxiety and depression, as well as help improve your mood. Here's how to start—and stick with—a writing routine.

BY KARLA WALSH

Remember back in grade school when you used to journal? Maybe it was during school, or perhaps it was via a lock-clad diary at home. Regardless, many of us lose this habit as our adult schedules fill up with work, social outings, errands, family obligations, meal prep and more.

But it's time to turn back and reinvigorate that old habit, suggests Shari Foos, a psychotherapist in Los Angeles and New York City and the founder of the Narrative Method. Your heart and your health will thank you.

The Health Benefits of Journaling

"A brief daily practice of 15 to 20 minutes is an easy commitment that can bring tremendous benefits over time," Foos says. Regardless of what you write about (we're not even asking you to log what you eat or your physical activity!), the health benefits of journaling include improved mood, lowered heart rate, better sleep, a greater sense of purpose and well-being, and reduced anxiety and depression.

Science bears this out. Journaling for just 15 minutes three days a week can elevate mood and improve overall wellness, per an October 2018 study published in the journal *JMIR Mental Health*.

"Engaging in activities that require concentration and focus, and where we have confidence in our abilities, puts us in a thought pattern called 'flow,'" says Sherry Benton, PhD, the Clearwater, Florida–based founder and chief science officer of the online therapy resource TAO Connect. "Self-consciousness disappears, and we are completely absorbed in the task. Depressive thought patterns are reduced or disappear. Creative activities, such as writing, music and art, are all

particularly good for putting us in flow."

And if you use a paper journal (like the Rifle Paper Co. for Cambridge Small Hardcover Lemon Blossom Journal; $9.99, Target) rather than a digital one, it can also offer some very valuable "unplugged" time.

"A big benefit that journaling has is giving yourself a break from the screen. Turn off your phone, computer or tablet and spend a couple of minutes screen-free," suggests Benton.

7 Different Types of Journaling

There's no right or wrong way to journal, so just go ahead and start jotting!

"Choose a regular time and create a space where you feel comfortable," Foos says. "When you start journaling, I recommend you begin each writing session by closing your eyes and breathing. Put your hand on your heart, and once you feel calmer, exhale and begin." If you'd like a little guidance, here are some popular frameworks for journaling.

Bullet: Make a list of whatever is in your heart. This could be anything from your to-do list to your goals for the week.

Dream: Jot down what you remember from your nightly dreams, plus what you envision they might mean in relation to your waking life. If any fears come up, feel free to let it out on the page—just try not to exaggerate them, Benton advises.

Gratitude: Take note of a set number of things

(say, five) you're thankful for, from that day or the day before. These can be as big or small as you'd like, Benton says: "If you look around, you can always find small things for which to feel grateful." Struggling to dig out of a more negative headspace? "I'm grateful my legs allowed me to walk through the supermarket today" and "I'm grateful my pillow is such a soft space to land at the end of the day" are a couple of examples. (By the way, a gratitude journal has been proven to be especially beneficial in aiding sleep.)

Artistic: Sketch a doodle, create a collage or write yourself a little note or poem. This free-form journal has no rules!

Nature: Record the beauty that surrounds you outside your window. Even better—write outdoors.

Stream of consciousness: The simple act of writing down your thoughts can be enlightening. "Sometimes it's easier to recognize our problems when we see them on paper," Benton says, rather than glossing over them in the whirlwind of one to-do to the next. "Seeing the correlation between your emotions and behaviors may help you understand what keeps you on track and what gets you off track," Foos adds.

Goal tracking: If you find it helpful to cement healthy habits or to strive for objectives, chart your progress on certain work or life goals.

How to Start Journaling (and Make It Part of Your Routine)

"Making choices that are realistic and sustainable is the real endgame," Foos says, so there's no need to think of this as writing the next best-selling novel. Start with five minutes per day and work up to 15, "writing down your honest thoughts and emotions of that particular day," Benton says. "Each day will be different, but writing down the positives and negatives can help put things into perspective by recognizing the importance and gratitude for the positives and the potential worst-case scenarios that we create in our mind about the negatives."

At any time along the way, if you find yourself catastrophizing, escalating or ruminating, try to slow yourself down.

"You can reframe your thoughts by writing them down and asking yourself, 'Are these realistic?' 'Is this an exaggeration?' 'Am I focusing on worst-case scenarios?' Then modify them to more helpful, realistic thoughts," Benton suggests. "This shifts the neurotransmitters in the brain and stops your body from constantly producing more adrenaline."

Finally, always aim to wrap up your journaling time with some self-appreciation—regardless of any digressions, Foos says.

Even if you miss a day (or 10), "none of us can be perfect, so treat yourself the way you would treat someone you love," she says, and pick up where you left off. "Accept the ups and downs and move on. Give yourself props for developing your inner life; it is the key to positive development and greater happiness. Whatever you do, don't make your relationship with yourself a chore." ●

CHAPTER 3

Peace of Mind

CULTIVATE A HAPPIER OUTLOOK WITH SIMPLE LIFESTYLE CHANGES, INCLUDING THE FOODS YOU EAT.

GOOD-MOOD FOOD

What you eat does more than keep you healthy: It can boost your spirits. Here are the key foods to eat to relieve symptoms of anxiety and depression—plus, the power of a mindful kitchen.

BY ASHLEY ABRAMSON

If you're found to have a mental health condition, your doctor may recommend you talk to a therapist or even take medication. But chances are you'll also be encouraged to tweak your lifestyle. Along with prioritizing your sleep routine and moving your body more frequently—both of which have been shown in scientific research to relieve symptoms of anxiety and depression—your doctor may nudge you to spend more time in the kitchen, preparing healthy foods.

It's no secret that diet can greatly impact your overall health, including your risk for medical conditions from cardiovascular disease to cancer. A growing body of evidence suggests that what you eat—and what you don't eat—could play an important role in mental health, especially depression. "The quality of a person's diet is linked to the risk for depression, and changing the quality of your diet can improve depression if you already have it," says Felice Jacka, director of the Food and Mood Centre at Deakin University in Australia.

Research about food's effect on mental conditions such as depression is still emerging, but a few things are clear. Your body and brain need several key nutrients to regulate your mood. A lack of these nutrients, or an excess of unhealthy foods, can have the opposite effect, leaving you at a higher risk for a low or anxious mood.

You may not be able to change your genes or control the stress you face in everyday life, but fortunately, most of us have the power to change what we eat. Here's what you need to know about the role of nutrition in mental health—including simple ways to shift your eating habits to improve your mood—according to experts.

APPROACHING MEAL PREPPING AS A MINDFULNESS EXERCISE CAN HELP YOU STAY PRESENT.

The Effect of Gut Health on Mood

One important part of nutrition's impact on mental health is the gut-brain axis, the two-way communication between your digestive tract and your brain, which originated from the same embryonic cells. "Then they become separate organs connected by the vagus nerve, which sends chemical messages both ways," says Uma Naidoo, MD, a nutritional psychiatrist and the author of *This Is Your Brain on Food.*

Trillions of microbes live in your gut, some health-promoting (known as good bacteria) and some harmful (bad bacteria). What you eat impacts the type and behavior of those microbes, which can trigger processes that influence your entire body, including your brain. While scientists are still working to uncover the specifics of the gut-brain axis and its effects on mood, Dr. Naidoo explains that when the gut isn't healthy, the two organs can't interact as effectively. For example, your gut bacteria break down and metabolize an amino acid called tryptophan, which can influence the amount of serotonin in your brain. It's also more difficult for your gut to absorb the nutrients you need for mental health if it's not healthy itself.

Your gut microbiota require specific types of foods to create the molecules that affect health, particularly the immune system. Because your gut is home to much of your immune system, a diet missing these foods can trigger inflammation, which has been shown to negatively impact mood. "Low-grade inflammation caused by factors such as poor diet is linked to almost every chronic disease you can think of, including mental illness," says Jacka. On the other hand, gut-healthy foods can promote better communication between the brain and gut and allow you to better absorb the nutrients your brain needs to function well.

Key Nutrients to Improve Your Mood

In today's culture, where convenience often takes precedence over health, many people don't

consume enough healthy foods, and they eat too many unhealthy ones. Combined with a sedentary lifestyle, the standard American diet increases the likelihood of developing serious medical conditions, including mental illness. The good news? "You can effect really profound change, quickly, by changing your diet," Jacka says.

In general, a diet that includes more whole foods and fewer processed foods is best for overall health and mental health. The well-known SMILES trial, a 2017 study of the effect of diet on major depressive disorder, compared patients who changed their diet with those who participated only in a social support intervention.

At the end of the trial, about a third of participants who changed their diet for three months met the criteria for remission of major depressive disorder, compared with 8 percent of the other group. The findings suggest that eating more healthful foods—such as whole grains, veggies and fruit, legumes and lean meats—and fewer processed and sugar-laden foods can have a significant impact on mental health.

Specific nutrients, including macronutrients, vitamins and minerals, have been identified in many other studies as important for mental health. For example, protein is an important building block in the body for muscle cells, enzymes and hormones. The amino acids found in protein are also key factors in producing neurotransmitters that can prevent depression and anxiety. Leigh Merotto, a Toronto-based gut health and fitness dietitian, suggests upping your intake of lean meats (such as skinless turkey and chicken), dairy (yogurt, milk, eggs and cheese) and protein-rich plant-based foods, such as nuts, seeds and legumes, to get more protein. "These foods also contain high levels of tryptophan, which your body needs to produce serotonin," Merotto says.

Healthy fats can nurture your brain and, in turn, your mental health. Omega-3 fatty acids, a type of unsaturated fat, can promote brain health by lowering inflammation and encouraging brain development and cellular communication. Many studies link omega-3s to better memory and learning, but some also correlate increased omega-3 fatty acid intake with lower rates of depression. For example, one 2016 meta-analysis found that people diagnosed with major depressive disorder benefited from higher levels of omega-3 fatty acids.

Eating cold-water fatty fish (such as wild sockeye salmon, tuna, sardines, mackerel and anchovies) is an easy way to add omega-3s to your diet. Frozen or canned fish are still nutritious, but aim for wild-caught fish when possible; wild fish typically have lower saturated fat than farm-raised, which is better for cardiovascular health. If you don't eat fish, you can get another type of omega fatty acid from seeds and nuts; however, Dr. Naidoo recommends adding a plant-based omega-3 fatty acid supplement to your diet, which is easier for your body to convert and use than the short-chain fatty acids in seeds and nuts.

Folate, or vitamin B_9, helps the body make the neurotransmitters associated with positive mood, such as serotonin and dopamine, says nutritional psychiatrist Drew Ramsey, the author of *Eat to Beat Depression and Anxiety*. Studies have found that up to a third of depressed people are deficient, so boosting your intake could improve your symptoms of low mood. Focus on leafy greens like romaine lettuce, arugula, spinach and watercress, along with brussels sprouts, asparagus, whole grains and eggs.

A third of SMILES trial participants who changed their diet for three months met the criteria for remission of major depressive disorder.

Other B vitamins help the brain make mood-regulating neurotransmitters, and it's not hard to increase your dietary intake. Boston-based dietitian Kara Lydon, the owner of Kara Lydon Nutrition and author of the e-book *Nourish Your Namaste,* says foods like poultry, eggs, dairy, whole grains, legumes, nuts and seeds are particularly rich in B vitamins, as are leafy greens. Many of these foods, she says, also contain tryptophan, the precursor to serotonin.

While people tend to associate low vitamin D levels with a depressed mood, studies actually suggest it's especially useful for relieving anxiety symptoms. According to Dr. Naidoo, it's thought that vitamin D helps protect parts of the brain that control how people respond to stress and anxiety.

Eating more vitamin D—found abundantly in fatty fish, egg yolks, beef liver and cheese, along with fortified cereals, milks and orange juice—can help improve your levels. Sunshine is another way to up your vitamin D. If you live in a colder climate, you may be susceptible to vitamin D deficiency in the winter months; Merotto suggests talking to your primary care provider about supplementing with this essential nutrient.

Minerals also play a role in mental health. Magnesium, for example, helps nerve and brain cells function effectively, and multiple studies show a deficiency can result in poor mood. Magnesium can also help to keep blood sugar at healthy levels, which may in turn promote a more balanced mood. To increase your magnesium intake, Ramsey suggests snacking on almonds and cashews and eating more spinach, black beans and soybeans.

In order to function properly, your brain requires energy, which it can access from hemoglobin, the iron-based protein in your blood. Hemoglobin also delivers oxygen to your organs—including your brain—which can help them function better, and it also helps produce the good-mood hormones dopamine and serotonin. Red meat is a great source of iron, but if you don't eat meat, you can find it in legumes, eggs, nuts and seeds. Spinach is also a great source of iron and many other important mood nutrients.

Foods that encourage gut healing and repair can also prevent inflammation from affecting the brain, which Dr. Naidoo says can improve mental health. Fermented foods, such as kefir, kombucha, and sauerkraut, increase the diversity of gut microbiota, which may improve gut health. Polyphenols, micronutrients found in vegetables, fruits, and many herbs and spices, are also associated with gut health, and so is dietary fiber. Complex carbohydrates such as vegetables, fruits, whole grains, legumes and nuts are your best bet for increasing fiber intake. A bonus: Fiber also slows down the digestion of carbohydrates and keeps blood sugar more stable, in turn supporting a more even-keeled mood.

A diet low in all of these nutrients can take a negative toll on your mood, but so can foods that contain unhealthy ingredients. According to Dr. Naidoo, some of the worst foods for your mood are ultra-processed foods, which contain refined grains, added sugars and trans fat, all of which can wreak havoc on your gut (and, thus, your mood). These foods are also more likely to be void of nutrients you need for mental health and to negatively impact your blood sugar, which can zap your mood.

What you drink can make a big difference in your mental health, too. While Dr. Naidoo says caffeine can be beneficial for mood, it may not be helpful for those with anxiety; plus, many people add unhealthy sweeteners to their coffee, which can be harmful to overall health.

A Mindful Lifestyle

If the idea of incorporating all these nutrients into your routine feels overwhelming, Ramsey suggests focusing on reducing highly processed foods and increasing whole foods, or foods that contain one ingredient. For example, if you're craving sweets, swap out your ice cream for full-fat yogurt, berries, pistachios, a drizzle of honey and dark chocolate shavings. And instead of dipping your tortilla chips in processed cheese dip, try whipping up your own guacamole or salsa with fresh vegetables, herbs and spices. "In doing that,

you've swapped out something that's delicious but doesn't have much nutrient density for something that's delicious and is filled with vitamins, minerals and phytonutrients," Ramsey says.

Enjoying whole, healthy foods is more likely to improve your nutrition, but it's also a great way to be more mindful. Studies show the practice of mindfulness, or being fully present in the moment, can also improve your mental health—and many food-related practices encourage that.

For example, buying fresh in-season food, getting involved in a community farmers market or even growing your own food at home can encourage you to eat more nutritiously while instilling a sense of meaning in your dietary pursuits. "Connecting to the food movement in your local community can help you feel more contentment in your diet and even find authentic joy in the experience," says Ramsey.

Food prep can also spark joy in your everyday life. It's easy to eat whatever's convenient, but cooking your own food can encourage mindfulness. As you cook, Lydon suggests taking extra time to notice the sound of the oil sizzling in the pan, the aroma of your garlic sautéing, the vibrant colors of your vegetables, and the feeling of the knife in your hand as you chop your greens. Then allow yourself to savor the textures and flavors of your food, which is one way to practice mindful eating. Lynn Rossy, PhD, author of *The Mindfulness-Based Eating Solution* and president of the Center for Mindful Eating, says this approach can instill gratitude for your food and body, along with encouraging you to pay attention to hunger and fullness signals. In the process, you may have the opportunity to gain more emotional awareness about what and why you're eating. For example, if you often reach for sweets on stressful days, ask yourself what need you're trying to fill and how you can meet that need in a longer-lasting, emotionally healthy way—whether that means talking to a loved one or practicing self-care by going to bed early.

And no matter what foods you include in your diet, remember: Studies may suggest certain foods can have a positive effect on mood, but your individual experience with what you eat is also important. "Each individual will have a different list of foods that elicit various positive emotional responses based on a variety of factors, such as connection, tradition and memory," says Lydon. "Research can't qualify the boost in mood you get from your grandmother's macaroni and cheese recipe or your mother's chicken noodle soup." ●

STRESS LESS RECIPES

These easy, healthy dishes highlight ingredients that nourish the gut-brain connection, combat symptoms of anxiety and depression, and contribute to a happier state of mind.

Persian Grilled Chicken

ACTIVE TIME: 50 MIN
TOTAL TIME: 12 HR 50 MIN

This easy grilled chicken owes its tenderness to an overnight soak in a yogurt–lemon juice marinade and its soulful flavor to saffron and onion. A healthy drizzle of saffron-infused butter before serving adds an extra layer of richness. Serve with aromatic rice with pistachios and torshi—Central Asian pickles available at Persian and Middle Eastern grocery stores.

- **¾ teaspoon saffron, divided**
- **1 tablespoon warm water**
- **1 cup whole-milk plain yogurt**
- **1 medium onion, finely chopped**
- **½ cup lemon juice**
- **1 teaspoon sea salt**
- **1 teaspoon ground pepper**
- **3½ pounds bone-in, skin-on chicken pieces**
- **2 tablespoons unsalted butter**
- **1 bunch cilantro or dill sprigs for garnish**

1. Combine ½ teaspoon saffron and the water in a large bowl. Let stand for 5 minutes. Stir in yogurt, onion, lemon juice, salt and pepper.
2. If using any chicken breasts, cut each into 2 equal portions. Add chicken to the marinade and turn to coat. Cover and refrigerate for at least 12 hours or up to 24 hours, turning the chicken a few times, if possible.
3. When ready to cook, build a medium-hot, multi-zone fire on a grill, or preheat one section of a gas grill to medium.
4. Remove the chicken from the marinade and drain well. Discard the marinade.
5. Oil the grill rack. Grill the chicken, turning once or twice, until browned and an instant-read thermometer inserted in the thickest part without touching bone registers 165°F, 16 to 24 minutes total. Move the chicken to a cooler spot as needed to dodge any flare-ups.
6. Meanwhile, melt butter in a small saucepan over medium heat. Crumble the remaining ¼ teaspoon saffron into the pan and cook until fragrant, about 2 minutes. Remove from heat.
7. Transfer the chicken to a platter and drizzle with the saffron butter. Garnish with cilantro or dill, if desired.

SERVES 6: ABOUT 2 PIECES CHICKEN EACH
CAL 368 **FAT** 19.9G (SAT 7.2G) **CHOL** 170MG
CARBS 3.2G **TOTAL SUGARS** 1.9G
PROTEIN 41.9G **FIBER** 0.3G **SODIUM** 363.2MG
POTASSIUM 448.5MG

Kohlrabi, Leek & Gruyère Pizza

ACTIVE TIME: 1 HR
TOTAL TIME: 1 HR

If you haven't yet tried kohlrabi, this pizza with leeks, thyme and Gruyère is a great way to sample the sweet, earthy vegetable.

- 1 tablespoon extra-virgin olive oil
- 8 ounces sliced cremini (baby bella) mushrooms
- 2 cups thinly sliced leeks, white and light green parts only, rinsed well
- 1 tablespoon chopped fresh thyme (or 1 teaspoon dried)
- ¼ teaspoon salt
- Ground pepper to taste
- ¼ cup dry white wine
- 1 pound pizza dough, preferably whole wheat
- 1½ cups shredded Gruyère cheese, divided
- 1 medium kohlrabi (about 12 ounces), peeled, halved and very thinly sliced
- Crushed red pepper

1. Preheat oven to 450°F.
2. Heat oil in a large skillet over medium heat. Add the mushrooms and cook, stirring often, for 5 minutes. Add the leeks, thyme, salt and pepper; cook, stirring frequently, until the leeks soften, 3 to 4 minutes. Add wine and cook, stirring occasionally, until the liquid evaporates, about 2 minutes. Remove from heat.
3. Roll pizza dough out on a lightly floured surface to about the size of a large baking sheet, then transfer to a large baking sheet. Sprinkle with 1 cup cheese, layer on kohlrabi, and top with the mushroom mixture. Sprinkle with the remaining cheese and crushed red pepper.
4. Bake the pizza until the kohlrabi is tender and the crust is golden, 18 to 22 minutes.

SERVES 4: ¼ PIZZA
CAL 501 **FAT** 22.8G (SAT 8.2G) **CHOL** 44.5MG **CARBS** 55.7G **TOTAL SUGARS** 6G (ADDED 1G) **PROTEIN** 22.8G **FIBER** 4.7G **SODIUM** 753.9MG **POTASSIUM** 519.5MG

Slow Cooker Vegetable Stew

ACTIVE TIME: 35 MIN
TOTAL TIME: 8 HR 30 MIN

Potatoes and beans make this tomato-based slow-cooked stew super hearty. You could add briefly sautéed chunks of zucchini or fresh corn kernels just before serving, or another can of cannellini beans for more substance. A dollop of pesto on top is also delicious. And adding homemade garlic croutons is an easy way to elevate this healthy dinner.

- 1 (28-ounce) can whole plum tomatoes
- 1 (15-ounce) can whole plum tomatoes
- 1 (15-ounce) can cannellini beans, rinsed
- 1½ cups frozen cut Italian (Romano) beans
- 12 ounces baby yellow potatoes
- 1 cup chopped onion
- 2 teaspoons dried oregano
- 1 teaspoon salt
- ½ teaspoon ground pepper
- ½ teaspoon crushed red pepper, plus more for serving
- 1 cup low-sodium no-chicken broth or vegetable broth
- 1 tablespoon extra-virgin olive oil
- 3 cloves garlic, minced
- Shaved Parmesan for garnish

Fresh Garlic Croutons:

- 1 clove garlic, chopped
- 2 tablespoons extra-virgin olive oil
- ½ teaspoon Italian seasoning
- 3 cups cubed (1-inch) crusty whole-grain bread

1. Place the tomatoes and their juice in a 4- to 7-quart slow cooker and crush them with your hands or a potato masher. Add the cannellini beans, Italian beans, potatoes, onion, oregano, salt, pepper and crushed red pepper. Stir in broth and cover. Cook on low for 8 hours (or high for 4 hours).
2. To prepare croutons: About 30 minutes before serving, preheat oven to 400°F. Mash chopped garlic into a paste with a fork or the side of a chef's knife. Transfer to a medium bowl and stir in 2 tablespoons oil and Italian seasoning. Add bread and toss to coat. Transfer to a rimmed baking sheet. Bake until golden, 12 to 15 minutes.
3. Just before serving the stew, heat 1 tablespoon oil in a small skillet over medium heat. Add minced garlic and cook, stirring, until just golden, about 1 minute. Stir the garlic and oil into the slow cooker. Divide the stew among 6 bowls and top with the croutons. Serve with more crushed red pepper and Parmesan, if desired.

SERVES 6: 1½ CUPS STEW & ½ CUP CROUTONS
CAL 407 **FAT** 10.9G (SAT 1.6G) **CARBS** 62.8G **TOTAL SUGARS** 10.7G **PROTEIN** 16G **FIBER** 12.4G **SODIUM** 829.3MG **POTASSIUM** 1019.9MG

+

LONG, FLAT ROMANO BEANS RANGE IN COLOR FROM GREEN TO PURPLE—EVEN SPECKLED. FIND THEM AT FARMERS' MARKETS.

Anti-Inflammatory Cherry-Spinach Smoothie

ACTIVE TIME: 5 MIN
TOTAL TIME: 5 MIN

This healthy smoothie is not only delicious, it also boosts your daily dose of anti-inflammatory foods. It starts with a base of creamy, gut-friendly kefir and includes cherries, which can lower the inflammatory marker C-reactive protein. Heart-healthy fats in avocado, almond butter and chia seeds deliver additional anti-inflammatory compounds to the body, while spinach offers a mix of antioxidants that sweep up harmful free radicals. Fresh ginger adds zing, plus a compound called gingerol, which preliminary studies suggest may improve inflammatory markers of heart disease if consumed daily.

1 cup plain low-fat kefir
1 cup frozen cherries
½ cup baby spinach leaves
¼ cup mashed ripe avocado
1 tablespoon salted almond butter
1 (½-inch) piece peeled ginger
1 teaspoon chia seeds, plus more for garnish

Place kefir in a blender. Add cherries, spinach, avocado, almond butter, ginger and chia seeds; puree until smooth. Pour into a glass and garnish with more chia seeds, if desired.

SERVES 1: 1¾ CUPS
CAL 410 **FAT** 20.1G (SAT 3.9G) **CHOL** 13.4MG **CARBS** 46.6G **TOTAL SUGARS** 33.1G **PROTEIN** 17.4G **FIBER** 10.1G **SODIUM** 169.4MG **POTASSIUM** 1163.2MG

Plank-Grilled Miso Salmon

ACTIVE TIME: 30 MIN
TOTAL TIME: 30 MIN

Besides adding smoky flavor, cooking salmon on a plank eliminates the triple pitfalls of grilling fish—drying out, sticking to the grate or breaking when you attempt to turn it. For this healthy grilled salmon recipe, the sweet-salty flavor of the miso-maple glaze counterpoints the buttery richness of the fish.

1 tablespoon maple syrup
1 tablespoon sake
¼ cup white miso
¼ cup mayonnaise
½ teaspoon lemon zest
1½ pounds salmon fillet, preferably king salmon, skinned
4 scallions, trimmed
¼ teaspoon ground pepper
2 teaspoons black and/or white sesame seeds

1. Heat maple syrup and sake in a small saucepan over medium heat just until warm. Remove from heat and whisk in miso until smooth. Let cool for 1 minute, then whisk in mayonnaise and lemon zest.
2. Set up your grill for indirect grilling. Build a medium-high heat fire, or preheat a gas grill to medium high.
3. Place the plank, smooth-side down, directly over the flame and grill salmon until the bottom is charred and smoky, 2 to 4 minutes. Set aside to cool.
4. Run your fingers over the salmon and remove any bones you find with tweezers. Place scallions on the charred side of the plank, leaving a little space between them. Place the salmon on the scallions and season with pepper. Spread the glaze on top and sprinkle with sesame seeds.
5. Grill the fish on the plank over indirect heat until the glaze is bubbling and browned and the fish is cooked through, 15 to 20 minutes. Serve on the plank, if desired.

SERVES 4: 5 OZ. SALMON EACH
CAL 357 **FAT** 17.3G (SAT 3.3G) **CHOL** 85.3MG **CARBS** 9.7G **TOTAL SUGARS** 3.5G (ADDED 3G) **PROTEIN** 34.6G **FIBER** 0.6G **SODIUM** 714.8MG **POTASSIUM** 692.5MG

Miso Vegetable Soup

ACTIVE TIME: 30 MIN
TOTAL TIME: 30 MIN

Tofu, rice and plenty of vegetables transform miso soup from a light accompaniment into a dish that's substantial enough to leave you feeling satisfied.

- 2 cups plus 3 tablespoons water, divided
- 2 tablespoons white rice
- 2 cups frozen stir-fry vegetables
- 1 (12-ounce) package extra-firm silken tofu, cut into small cubes
- 2 tablespoons miso
- 2 scallions, thinly sliced
- 1 teaspoon rice vinegar, or to taste
- ½–1 teaspoon sugar, to taste

1. Bring 2 cups water and the rice to a boil in a large saucepan over high heat. Cover, reduce heat to a gentle simmer, and cook until the rice is just tender, 12 to 15 minutes.
2. Add stir-fry vegetables to the pot, increase heat to high and bring to a boil. Cook until the vegetables are heated through, stirring occasionally, 2 to 3 minutes. Add tofu and cook until heated through, about 2 minutes. Remove from the heat.
3. Combine miso and the remaining 3 tablespoons water in a small bowl and stir to dissolve. Add the miso mixture, scallions, rice vinegar and sugar to the soup and stir to combine.

SERVES 2
CAL 208 **FAT** 4.4G (SAT 0.7G)
CARBS 26.1G **TOTAL SUGARS** 6.2G **PROTEIN** 17.8G
FIBER 3.6G **SODIUM** 773.5MG
POTASSIUM 514.5MG

KEEPING THE KIDS HEALTHY

Eating good food is important for children's mental health. Plus, two picky-eater recipes to help you pack in more vegetables.

JESSICA BALL, RD

Fruits and vegetables are super important for kids to be able to grow up healthy and strong. Science recommends that children ages 2 to 18 get at least two servings of fruit and three servings of vegetables each day. But getting kids to eat their fruits and vegetables is often easier said than done. If you need additional reasons to help your kids boost their intake, new research has found that students who eat more fruits and vegetables might have better mental well-being than those who eat less.

A recent study published in *BMJ Nutrition, Prevention* and *Health* looked at 9,000 students from across the U.K. About 7,500 were in secondary school (middle- and high-school equivalent in the U.S.), and 1,500 were in primary school (or elementary school, as we know it here). Students self-reported their diet and were given age-appropriate tests for mental well-being that looked at happiness, relaxation and healthy interpersonal relationships. The study found a strong association between eating more fruits and vegetables and higher mental well-being scores. However, only about 25 percent of the students met the recommendation of at least five servings of produce a day.

Another interesting finding concerned breakfast, an especially important meal for school-age kids, as it provides the fuel they need to learn and function in general. However, the research found that more than one in five secondary schoolchildren and one in 10 primary schoolchildren didn't eat a standard breakfast at all, and many just had a snack or drink in place of a meal. Those who had a full breakfast had significantly better mental well-being scores than those who skipped the morning meal.

In short, the findings suggest that eating a healthy diet that includes a full breakfast (including an entrée like toast, cereal, yogurt or eggs) and at least five servings of fruits and vegetables a day leads to the best mental-health outcomes for children. Unfortunately, many students surveyed were missing the mark with either fruits and vegetables, breakfast, or both.

Why Are Kids Missing the Mark?

Many students and families rely on school nutrition programs for their meals. If a school doesn't have a breakfast program, it may mean a child's first meal of the day isn't until lunchtime. And given the food-supply challenges that came with the coronavirus pandemic, it's not guaranteed that lunch, or any school meal, will include fruits and veggies. If there are limited culturally appropriate fruit and vegetable options, that can also deter kids from making healthy choices.

Not only is access to and availability of fruits, veggies and certain meals in general a challenge, but there's also the acceptance part. Kids, who are still learning to like or even try a lot of foods, can be quick to write off fruits and vegetables. That's where tasty, kid-friendly recipes can come in handy in helping them meet the mark.

Beyond making family-friendly meals and adding in vegetables where you can, there are many other ways to get your kids the nutrients they need to be at their best. Food insecurity affects more than 20 percent of American families, so know that you are not alone if you're struggling. Women, Infants and Children (WIC) and the Supplemental Nutrition Assistance Program (SNAP) are meant to help families get sufficient funds for healthy meals. Also,

familiarizing yourself with school and other sources of meals in your area is a good way to find help within your community. Frozen and canned foods can be just as nutritious as fresh foods, so they're another good option to increase your fruit and vegetable intake and help your money go further.

It can take 15 or more tries to know if you like a new food, so it's important to expose kids to new fruits and vegetables multiple times. To help make new foods feel more familiar, pair them with foods they already enjoy. Check out our ideas on how to help picky eaters embrace healthy foods, like blending fruit into breakfast foods and adding vegetables into dessert. Last but not least: It's no secret that parents and caretakers are under a great deal of stress. It might not always feel realistic to make sure your little ones are getting five or more servings of produce a day. Luckily, the study found that the relationship between mental well-being and fruit and vegetable intake was linear. This means that even though the highest intake had the best result, some intake was better than none.

While it might be a challenge to increase children's fruit and vegetable intake, the extra effort is worthwhile. Beyond keeping their bodies healthy and preventing disease, new research suggests that it can improve mental health as well. A morning meal is also important to keeping your kids focused and healthy in all senses of the word. ●

Chocolate Zucchini Brownies

ACTIVE TIME: 50 MIN
TOTAL TIME: 50 MIN

The batter for this healthy one-bowl brownie recipe is stirred together right in the saucepan that's used to melt the butter and chocolate—no mixing bowl needed, and less cleanup for you. Using shredded zucchini in this healthy dessert recipe creates a tender, moist brownie with about half the amount of butter and sugar found in a classic recipe, and the veggie is virtually undetectable in the baked brownies.

- **8 tablespoons (1 stick) unsalted butter**
- **4 ounces unsweetened chocolate, chopped**
- **1 cup granulated sugar**
- **¼ teaspoon salt**
- **1 cup shredded zucchini**
- **2 teaspoons vanilla extract**
- **2 large eggs**
- **1 cup white whole-wheat flour**
- **¾ cup chopped semisweet chocolate or chocolate chips**
- **⅔ cup toasted pecans, coarsely chopped, divided (optional)**

1. Preheat oven to 350° F. Line an 8-inch-square baking pan with foil, letting it overhang the sides; coat with cooking spray.
2. Melt butter in a large saucepan over medium-low heat. Remove from heat, add unsweetened chocolate and stir until melted. Add sugar and salt; stir until well combined. Stir in zucchini and vanilla. Add eggs one at a time, vigorously mixing after each addition. Fold in the flour until almost incorporated. Fold in chopped chocolate or chips and ½ cup pecans (if using) until just combined. Transfer the batter to the prepared pan, spreading evenly. Sprinkle with the remaining pecans (if using).
3. Bake until the sides look dry and the middle is firm to the touch, about 30 minutes. Let cool completely, then lift out of the pan using the foil. Cut into 16 squares.

SERVES 16: ONE 2-INCH BROWNIE
CAL 220 **FAT** 12.4G (SAT 7.5G)
CHOL 38.7MG **CARBS** 25.5G
TOTAL SUGARS 17.2G (ADDED 17G)
PROTEIN 3.3G **FIBER** 2.5G
SODIUM 49.3MG **POTASSIUM** 128MG

Sweet Potato Mac & Cheese

ACTIVE TIME: 30 MIN
TOTAL TIME: 30 MIN

Fiber-rich sweet potato is used as the base for the cheese sauce in this hearty homemade macaroni and cheese recipe. The bright orange color tricks your eyes into thinking this healthy dish is loaded with cheese, but there's actually only about half as much cheese in it as you'd use in a traditional recipe.

- **8 ounces whole-wheat elbow noodles (2 cups)**
- **1 medium sweet potato (about 12 ounces)**
- **2 cups nonfat milk**
- **2 tablespoons all-purpose flour**
- **1 small clove garlic, minced**
- **1¼ cups shredded sharp Cheddar cheese**
- **1 tablespoon Dijon mustard**
- **¼ teaspoon salt**
- **¼ teaspoon freshly ground pepper**
- **½ cup frozen peas, thawed**
- **3 tablespoons coarse dry whole-wheat breadcrumbs**
- **1 teaspoon extra-virgin olive oil**

1. Position a rack in the upper third of your oven; preheat broiler. Coat a 2-quart broiler-safe baking dish with cooking spray.
2. Cook the noodles in a large pot of boiling water until just tender, 7 to 9 minutes. Drain; set aside.
3. Meanwhile, prick sweet potato with a fork in several places. Microwave on high until tender all the way to the center, 7 to 10 minutes.
4. Whisk the milk, flour and garlic in a large saucepan. Heat over medium heat, whisking frequently, until mixture is steaming and hot but not boiling. Remove from heat.
5. As soon as the sweet potato is cool enough to handle, cut open and scoop the flesh into the steaming milk. Puree with an immersion blender until smooth. (Alternatively, transfer to a blender and puree just until smooth, then return to the pot. Use caution when pureeing hot liquids.)
6. Add cheese, mustard, salt and pepper and stir until the cheese melts. Add the pasta and peas to the sauce and stir to coat. Transfer to the prepared baking dish. Combine breadcrumbs and oil and sprinkle on the pasta. Broil on the upper oven rack until top is lightly browned and crispy, 1 to 2 minutes.

SERVES 4: ABOUT 1¼ CUPS
CAL 481 **FAT** 14.2G (SAT 7.3G) **CHOL** 38.5MG **CARBS** 68G **TOTAL SUGARS** 12.6G **PROTEIN** 23.9G **FIBER** 9.8G **SODIUM** 518.8MG **POTASSIUM** 620.4MG

THE HUNGER CONNECTION

Do you crave carbs when you're stressed? You can thank your hormones for that.

BY LAINEY YOUNKIN, RD, LDN

Stress is the body's response to a trigger, or stressor, that sets off a physiological response. You know the feeling—your heart starts to beat faster and you feel anxious. This is actually a good thing, at least in the short term. But long-term stress, as you might imagine, is not great for your health. It wreaks havoc on your hormones and can lead to weight gain, inflammation, anxiety and chronic diseases. While you can't control every stressor in your life, you can help keep your hormones balanced through diet, exercise and lifestyle choices. Read on to learn how.

What Are Stress Hormones?

Imagine you're walking down the street when a lion jumps out in front of you. Immediately, two hormones are released—adrenaline and cortisol. Adrenaline, also called epinephrine, triggers the fight-or-flight response. Blood vessels contract and send blood to your heart and lungs.

Cortisol, also called the stress hormone, increases heart rate, blood pressure, blood glucose, breathing and muscle tension. Your body says "Give me glucose now"—sugar and energy—so you can think and act quickly. Simultaneously, it suppresses the digestive and immune systems, which aren't needed for your immediate survival.

What's the Difference Between Acute and Chronic Stress?

An acute stress response (like in the imaginary lion scenario) is normal. The surge in hormones alerts you to wake up, pay attention and figure out if you're going to fight or flee. But when you live in a chronic state of stress, cortisol and adrenaline stay

A STUDY IN *BIOLOGICAL PSYCHIATRY* FOUND THAT EVERYDAY STRESSORS CAN CAUSE 11 POUNDS OF WEIGHT GAIN A YEAR.

elevated, leading to restlessness, anxiety, overeating and chronic diseases. Work, relationships, finances and health concerns can all lead to chronic stress.

Can Stress Cause Overeating?

Stress is linked to overeating. We seek comfort when stressed, and food is comforting. Bread, pasta and desserts make us feel better, temporarily, because sugar releases dopamine, the feel-good hormone.

Additionally, elevated cortisol increases appetite. When you're not stressed, glucose is taken from the blood to cells for energy, and any extra is stored as fat. When you are stressed, the body keeps insulin from being released. It doesn't want insulin to take glucose to your cells because it potentially needs the glucose for the fight-or-flight response.

Deprived of glucose, your cells send a signal to the brain that says "I'm hungry," stimulating appetite. Because you're stressed and want something comforting, you're likely to reach for foods high in carbohydrates. This can cause a vicious cycle, raising your blood sugar again. Any extra glucose or carbs that your body doesn't need is stored as fat. Over time, this cycle can lead to weight gain.

Hunger hormones play a role, too. "In some studies, stress may increase ghrelin [the hunger hormone], which may increase appetite," says Isabel Smith, a registered dietitian and hormone expert in New York City. "Higher ghrelin means higher appetite."

She adds, "Decreased sleep also seems to increase stress hormones—and may affect the foods people want." Studies show that lack of sleep raises both cortisol and ghrelin, a double whammy for overeating and weight gain.

How Can I Keep My Hormones Balanced?

The good news is that you can help balance your hormones through diet, exercise and other lifestyle changes. There are two ways to help deal

with stress: Remove the stress trigger and control your response.

The first is usually doable but often difficult, because it isn't easy to get rid of a boss, work project, family member or global pandemic. The second is challenging too, but certain things can help. Managing stress in a healthy way keeps hormones balanced and health conditions at bay.

Eat vegetables, protein, whole grains and healthy fats at each meal. This combination helps stabilize your blood sugar and keep you full. Eating enough throughout the day prevents overeating at night. Swap saturated and trans fats like red meat and fried foods for the anti-inflammatory omega-3 fats found in salmon, tuna, walnuts, chia seeds and flaxseed. Saturated fats, processed foods and refined carbohydrates cause inflammation and keep cortisol levels high.

Have some sweets if it makes you feel better, but don't use food as a long-term coping mechanism. "Sometimes eating something carby or sweet because we're stressed is just what's going to happen," says Anabelle Clebaner, RD, RYT, a registered dietitian and founder of Wellspring Nutrition. "The problem is when we continue to use food as a coping mechanism for stress. Taking a mindful moment to ask yourself why you're craving a doughnut before going for it can be helpful too. Perhaps what you really need in that moment is to call your mom, get a hug or massage from your partner, or take a calming bath. Relying on sweets to manage stress is not effective for reducing stress or making us feel better for more than a few minutes. Of course, sometimes all you need is a sweet treat to move on—and if that's the case, go for it. Just be aware that it is not your only way to deal with stress and that you have other tools in your toolbox to help manage stressful situations."

Get rid of the things that increase your stress if you can. "If you find that work is the cause of your stress, try checking your email less often and not opening your computer right when you wake up," says Clebaner. She also recommends turning off the news. These are a couple of simple ways to nix the stressors in our environment.

She also suggests getting outdoors and into nature, breathing exercises such as box breathing, putting away screens during mealtimes, stretching, using calming essential oils like lavender, drinking herbal tea and taking baths.

Lack of sleep alone throws hunger hormones out of whack. Combine that with stress and your ghrelin (hunger hormone), leptin (satiety hormone) and cortisol will be imbalanced. Aim for seven to eight hours of sleep per night.

The Bottom Line

Stress raises levels of the hormones cortisol and adrenaline, which increase blood pressure, blood sugar, heart rate and muscle tension. This acute response helps you make a decision and act quickly when there's a perceived threat. But when you experience chronic stress, cortisol and adrenaline stay elevated, causing increased hunger, anxiety, inflammation and health conditions.

It's okay to "eat your feelings" every once in a while. Sometimes a brownie does make you feel better. But food shouldn't be a long-term coping mechanism. Find other ways to manage stress, like meditation, massage or exercise. A healthy diet, adequate sleep and lower stress will balance hormones and lead to optimal health. ●

GUM HEALTH MATTERS

A different kind of plaque buildup might be responsible for not only heart disease, but also depression, anxiety and more.

BY KARLA WALSH

A history of gum disease increases the risk for heart conditions, autoimmune diseases and diagnosable mental illness, according to a study done in the United Kingdom and published in the November 2021 issue of the journal *BMJ Open*.

"Poor oral health is extremely common," coauthor Joht Singh Chandan, PhD, of the University of Birmingham's Institute of Applied Health Research, told *University of Birmingham News*. (That includes in the U.S.: A whopping 47 percent of Americans 30 and older have gum disease, the Centers for Disease Control and Prevention reports.) "When oral ill health progresses, it can lead to a substantially reduced quality of life. However, until now, not much has been known about the association of poor oral health and many

94 PERCENT OF THOSE WITH GUM DISEASE DON'T FEEL LIKE ANYTHING IS "OFF" IN THEIR MOUTH.

chronic diseases, particularly mental health."

We do know plenty, however, about how poor oral health relates to heart disease and the plaque buildup in the arteries that can lead to heart attacks and strokes. "An inflammatory response in the gums can lead to an inflammatory response in the rest of the body," says Brian Kantor, DDS, a cosmetic dentist at Lowenberg, Lituchy & Kantor in New York City. "So having a healthy mouth and healthy gums can lead to overall health." Over time, the chronic inflammation that's triggered by swollen gum tissue puts our body at increased risk for an array of other health problems, according to researchers at Harvard Medical School.

As a result of the pervasiveness of periodontal (gum) disease and the lack of a large amount of evidence about how it impacts the rest of the body and the brain, the research team conducted one of the largest epidemiological studies ever. They tapped into data from more than 64,000 patients in the U.K. who had a general practitioner–reported case of gum disease, including two of the most common forms, gingivitis (which 60,995 had) and periodontitis (diagnosed in 3,384 of the individuals).

The scientists crunched the numbers to determine how many people with and without gum disease later developed one of the following conditions over the course of the next three years: cardiovascular disease, including heart failure, stroke, and vascular dementia; cardiometabolic disorders, such as high blood pressure and type 2 diabetes; autoimmune conditions, including arthritis, type 1 diabetes and psoriasis; and a mental health challenge, such as depression, anxiety or another serious mental illness.

Compared with their healthy-mouthed peers, patients with gum disease at the start of the study were this much more likely to be diagnosed with one of these other conditions: mental health challenge, 37 percent; autoimmune condition, 33 percent; cardiovascular disease, 18 percent; cardiometabolic disorders, 7 percent (although for type 2 diabetes, the rate jumped to 26 percent).

In addition to proving, once again, how interconnected our body's systems are, the findings highlight the importance of regular dental checkups and "taking a holistic approach when treating people," says Caroline Aylott, head of research delivery at Versus Arthritis in the U.K.

"An important implication of our findings is the need for effective communication between dental and other health care professionals to ensure patients obtain an effective treatment plan targeting both oral and wider health to improve their existing overall health and reduce the risk of future illness," says Krish Nirantharakumar, MD, co–senior study author, theme lead for health informatics, and professor in health data science and public health at the University of Birmingham's Institute of Applied Health Research. ●

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Your Brain on Chocolate

As if you needed another reason to indulge your cravings: Older adults who reported eating dark chocolate at least once a week scored higher on a number of cognitive tests compared with those indulging less often, according to a study published in the journal *Appetite.* The researchers point to a group of compounds in chocolate called methylxanthines, which include caffeine, that have been shown to improve concentration and mood. (When you feel good, your brain also performs better!) And a Spanish study found that adults who eat 2.5 ounces of chocolate a week score better on tests used to screen for cognitive impairment, such as dementia.

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